Journal OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

Joint Pan American-AVMA Meeting, Kansas City, August 23-27, 1959

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Extended protection against erysipelas with DURAGEN*

ERYSIPELAS VACCINE LIVE CULTURE - MODIFIED

This modified vaccine is safe for swine of all ages, yet possesses unusually high immunizing power. DURAGEN confers practically solid protection to 6 months and satisfactory protection to 9 months.

DURAGEN is a new vaccine with an important plus factor - protection against erysipelas arthritis. Laboratory and field tests showed 80 per cent fewer crippling lesions in pigs vaccinated with DURAGEN. This new step in veterinary preventive medicine can be an important economic factor for you and your clients. We invite your most critical trial.

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SUBSIDIARY OF ELI LILLY AND COMPANY

Vol. 134 June 15, 1959 No. 12

NORDEN VETERINARY NEWS

No. 1

Avirulent and Modified Erysipelas Vaccines

Two types of live culture erysipelas vaccine are available in addition to live culture E. Rhusiopathiae vaccine —they are the avirulent and the modified types. EVA (Norden), the original erysipelas vaccine live culture, avirulent, should not be confused with modified vaccine produced from an attenuated culture.

Among live culture vaccines, only EVA-type vaccine is avirulent—demonstrated by tests in support of license application and in field use under every conceivable condition. EVA is avirulent—not attenuated. Thus EVA offers these advantages:

1. Remarkable freedom from local and systemic reactions
2. Will not cause erysipelas in swine or man
3. Cannot seed premises
4. Will not spread infection to unvaccinated swine

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Unlike the Blunderbuss, which was effective only at short range, today's guided missile can be fired at targets thousands of miles away with pinpoint accuracy.

Antibiotics have also come a long way since Fleming discovered penicillin. IOMYLCIN (Norden) has an affinity for alveolar tissues—resulting in up to 5 times greater concentration in lung and mammary tissues with therapeutic levels lasting 8 to 12 hours.

Is your antibiotic therapy getting scattergun results—or is it being directed to the area where it is most needed?

Nebraska Studies Reveal Relationship Between Flooding and Leptospirosis

Association of leptospirosis with flooding adds another dimension to knowledge of the disease, according to Dr. A. L. Brown, Ph.D., of the Norden biological research staff. Analysis of data compiled by the USDA reveals that an increase in the incidence of *L. pomona* infection in Nebraska can be correlated with the end of the drought in 1957, especially in areas that were flooded.

In the fall of 1956, when this survey first began to test large numbers of samples, Southeastern Nebraska was experiencing a drought of several years' duration. From October, 1956, through April, 1957, rainfall increased to normal or above, followed in July by considerable flooding. Rainfall continued above normal during the remainder of the year, and the fields were unusually wet.

The largest number of herds diagnosed positive in any month of 1957 was 6 in December.

The number of herds with serologically positive animals and the amount of leptospirosis being diagnosed began to increase in July and continued to increase until January, 1958, when 12 herds were found. Early 1958 thus found this area with a number of carrier animals. In July there was record rainfall with flooding, and again heavy rainfall in September with extensive flooding. In August, 18 herds were found infected from among those submitted. At this point the serological survey had to be dropped to concentrate on diagnostic work. In September, 77 new positive herds were located; in October, 62; and in November, 33, creating a serious leptospirosis problem in the area.

Uses for Leptospirosis Pomona Bacterin (Norden)

1. To check the spread of leptospirosis in a herd or drove following diagnosis.
2. To protect animals in herds adjoining infected herds or along a common watershed.
3. To protect susceptible animals before introduction into herds or areas which are contaminated.
4. For protecting animals taken to shows and returned to herd.
5. To protect cattle in feeder lots, especially where pigs and cattle are fed together.

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EDITORIAL STAFF: W. A. Aitken, *Editor in Chief;* Donald A. Price, *Associate Editor;* H. E. Kingman, Jr., *Managing Editor;* Eva G. Bailey, *Assistant to the Editors.*

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extensive field trials show 86% of cats protected by vaccine			
No. of cats	Status	No. of cats remaining well	No. of cats developing symptoms
1482	vaccinated	1254 (86%)	208 (14%)
809	controls	483 (60%)	326 (40%)
field use in noninfected cats			

therapeutic effects also indicated			
No. of cats	Status	No. of cats recovering in 5 days	No. of cats remaining sick after 5 days
611	treated	449 (74%)	162 (26%)
379	controls	66 (17%)	313 (83%)
field use in infected cats			

PITMAN-MOORE COMPANY Division, **ALLIED LABORATORIES, INC.**, Indianapolis, Indiana

Correspondence

May 1, 1959

Dear Sir:

In sources of news other than the JOURNAL, some criticism has been leveled at the Angell Memorial Hospital staff for its publication and news releases (of its parent organization, the Massachusetts S.P.C.A.) concerned with canned red meat tuna and other fish-base foods sold for feeding cats.

Veterinarians of the present generation possibly are not acquainted with the "mess" created in the 1920's and 1930's by manufacturers of dog food, and the events which finally contributed to the development of the many excellent dog foods of today. When the preparation of dry and canned dog food became promisingly profitable—as a method of disposing of milling and packing byproducts—very crude standards were used in evaluating "formulas" and in their labeling. Little knowledge was available as to the deficiencies of the many foods sold, probably because most deficiencies were hard to measure and most of the foods were fed combined with "table scraps." It was not until a strikingly clear clinical manifestation (hysteria—so-called "running fits") was definitely associated with the feeding of biscuit-type food that the "boom" was really lowered on the unscrupulous manufacturers, of which there were many. Many veterinarians of the era stumped locally against these harmful foods, but it took years before the offending agent (agenized flour) was discovered and eliminated by many manufacturers, and prepared dog food subsequently came of age.

The Joint Committee on Foods of the A.A.H.A. and the AVMA, sparked by the energetic leadership of Dr. Mark L. Morris, lent their considerable weight to the attack and deserve much of the credit for reforms in dog food manufacture.

Veterinarians have been aware of the inadequacies of many of the canned cat foods during the last 15 years of their increasing popularity. Professional advice given to a limited number of clients has actually only slight effect against widely advertised propaganda. Since most of the faults and deficiencies of the fish-base cat foods were and are difficult to measure, the occurrence of a serious and readily detectable syndrome (steatitis) associated with a particular type of food has given a weapon for those interested in the welfare of the cat to "lower the boom" again, and force a change in the haphazard marketing and labeling practices now in vogue in the cat food industry.

Veterinarians in general probably do not know that canners of red meat tuna for cats knew of the occurrence of steatitis in cats fed this product fully a year before the Angell Memorial report (see JOURNAL, Dec. 15, 1958). Some of the manufacturers were also aware of the fact that the U.S. Food and Drug Administration was at that time in possession of data indicating that steatitis associated with the feeding of canned red meat tuna had been reported from several areas of the country, and that both the disease and the labeling of the tuna were under scrutiny for a long time prior to the November (1958) news release.

It was also of interest to find resistance of metropolitan newspaper editors to the publication of an obviously truthful report concerning a widely advertised product. There were exceptions, however, and the *Washington Post-Times Herald,* through a staff medical reporter, gave considerable prominence to the report taken from a lecture given in that city before the D. C. Academy of Veterinary Medicine by Dr. Jean Holzworth, of the Angell Memorial staff.

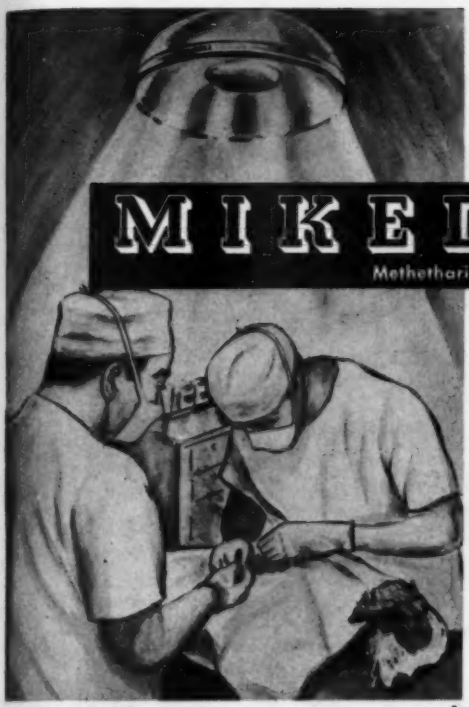
Obviously, concerted attack by veterinarians against a large and well-entrenched industry should not be made unless unassailable facts are at hand; but who *but* veterinarians and humane societies will defend pet animals in such a challenging situation? A press attack constitutes the most effective form of combat, and we at the Angell Memorial Hospital of the Massachusetts S.P.C.A. have no apologies to make for our efforts to alter the marketing and labeling of foods that were, and still are, harmful to our companion animal, the cat.

It must be obvious to all small animal practitioners that neither all of the present day prepared dog foods, nor many of the prepared cat foods, meet the requirements of good nutrition—since many manufacturers have found that palatability, plus advertising, will generate sales and promote profits, and that labeling need only stick as close to the truth as does advertising in general. Veterinarians owe it to the canine and feline population and to their owners who trust the veterinary profession to speak out forcefully when scientific and moral considerations call for such expression.

Sincerely,

s/GERRY B. SCHNELLE, V.M.D.

Boston, Mass.



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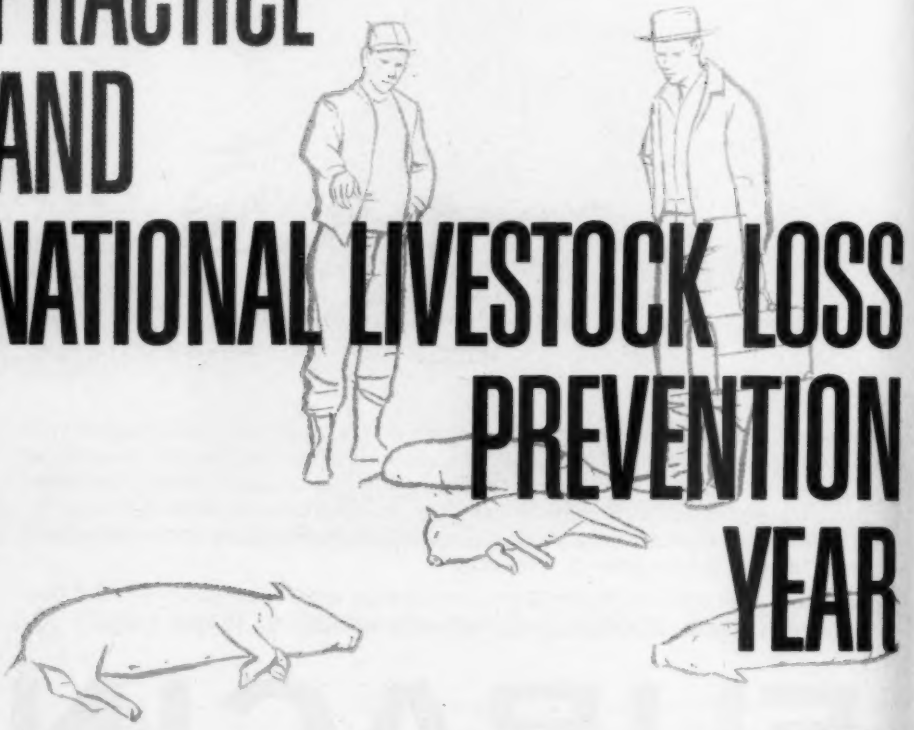

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- *to teach farmers to rely on their veterinarian as the best way to prevent these livestock losses.*

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Washington News

Legislative

U.S.D.A. appropriations for fiscal year 1960, **H. R. 7175,** was reported to the House May 15, with **H. R. Report No. 365,** passed May 20. It includes for ARS: **research activities,** $63,961,590; **plant and animal diseases and pest control,** $48,340,600 (earmarks $400,000 for eradication of vesicular exanthema of swine, and $15 million for brucellosis eradication—latter is a $5 million reduction authorized in the 1959 budget); **meat inspection,** $21,135,100; **A.M.S. poultry inspection,** $9 million.

Senate Committee has held hearings but not yet reported the U.S.D.A. submitted budget (see JOURNAL, Feb. 15, 1959, adv. p. 16).

S. J. Resolution 41, International Health and Medical Research Act of 1959 (see JOURNAL, March 15, 1959, adv. p. 16), which was reported favorably by the Senate Labor and Public Welfare Committee with amendments (Senate Report No. 243), passed the Senate May 20, 1959.

Hearings on **S. 1628** relative to **radiation hazards** (see JOURNAL, May 15, 1959, adv. p. 12), were held May 14 and 15 by Senate Labor and Public Welfare Committee, then recessed, subject to call of the Chair.

On May 21, the Senate Subcommittee on Agricultural Research and General Legislation held hearings on **S. 864, greater protection against diseases of livestock and poultry** (see JOURNAL, March 15, 1959, adv. p. 16). The AVMA filed a statement supporting the proposed legislation.

New Bills

H.R. 6906, Rep. Fogarty (D., R.I.), authorized a 10-year program for construction of medical, dental, and public health educational facilities.

H.R. 6871, H.R. 6913, H.R. 6922, and H.R. 7064, amend Public Health Service Act to provide for public health training program. These bills are by Rep. Rhodes (D., Pa.), Roberts (D., Ala.), Dollinger (D., N.Y.), and MacDonald (D., Mass.), respectively.

H.R. 7014, Rep. Fogarty (D., R.I.), to vest primary responsibility for protection of public health and safety from radiation hazards in the Public Health Service, H.E.W. Department.

H. Con. Res. 169, Rep. O'Hara (D., Ill.), to provide for development of international education program through United Nations.

S. 1979, Sen. Smathers (D., Fla.), **to encourage establishment of voluntary pension plans by self-employed.** It is identical with **H.R. 10,** Keogh-Simpson tax deferment, which **passed the House,** (see JOURNAL, Apr. 15, 1959, adv. p. 16).

S. 1897, Senators Johnson (D., S. Car.) and Carlson (R., Kan.), by request, to improve compensation policies and practices of the federal government with respect to civilian personnel.

S. 1900, Senators Holland (D., Fla.), Aitken (R., Vt.), to amend the **Federal Insecticide, Fungicide, and Rodenticide Act** to include nematocides, plant regulators, defoilants, and dessicants. Hearings were held by Senate Agricultural Subcommittee on Research and General Legislation on May 21. Identical with **H.R. 6436** (see JOURNAL, June 1, 1959, adv. p. 12).

S. 1933, Sen. Johnson (D., S. Car.), to provide **uniform premium pay system for federal employees** in inspectional services, and to authorize a uniform system of fees and charges for such services.

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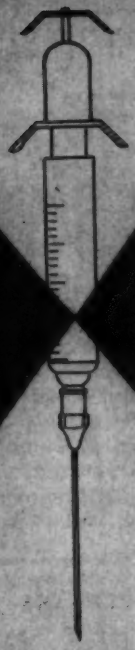

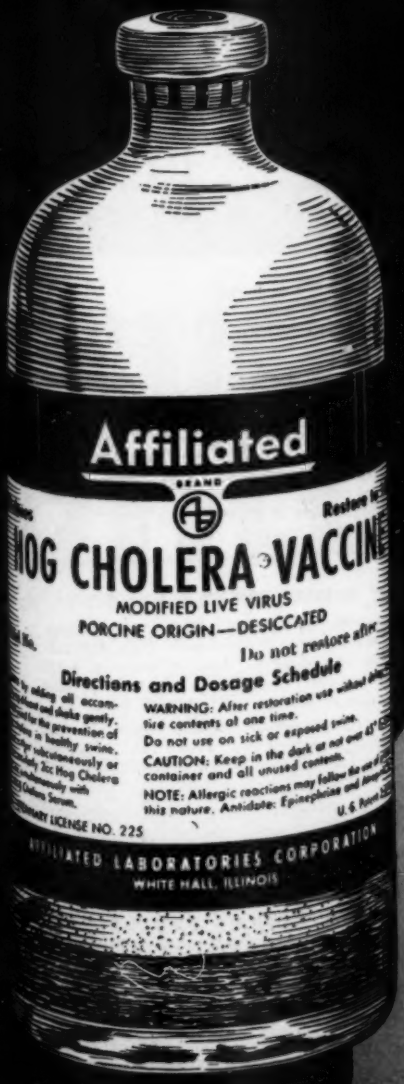
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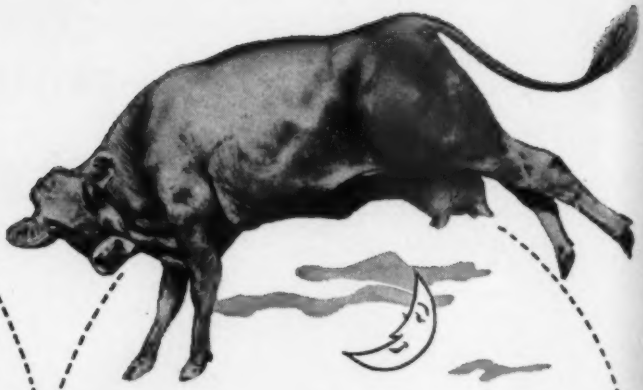

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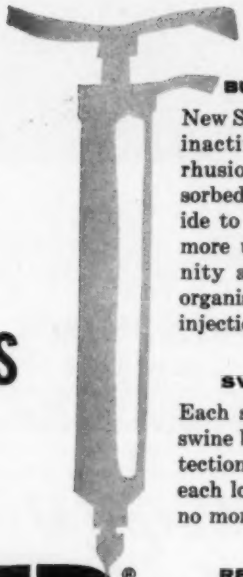

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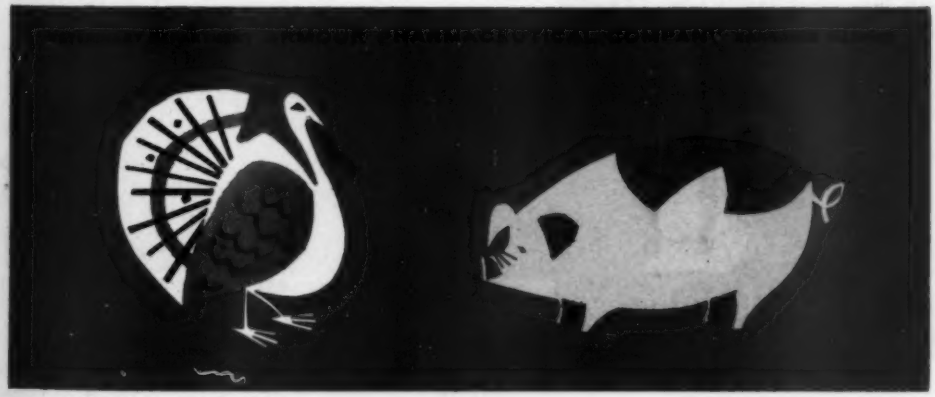

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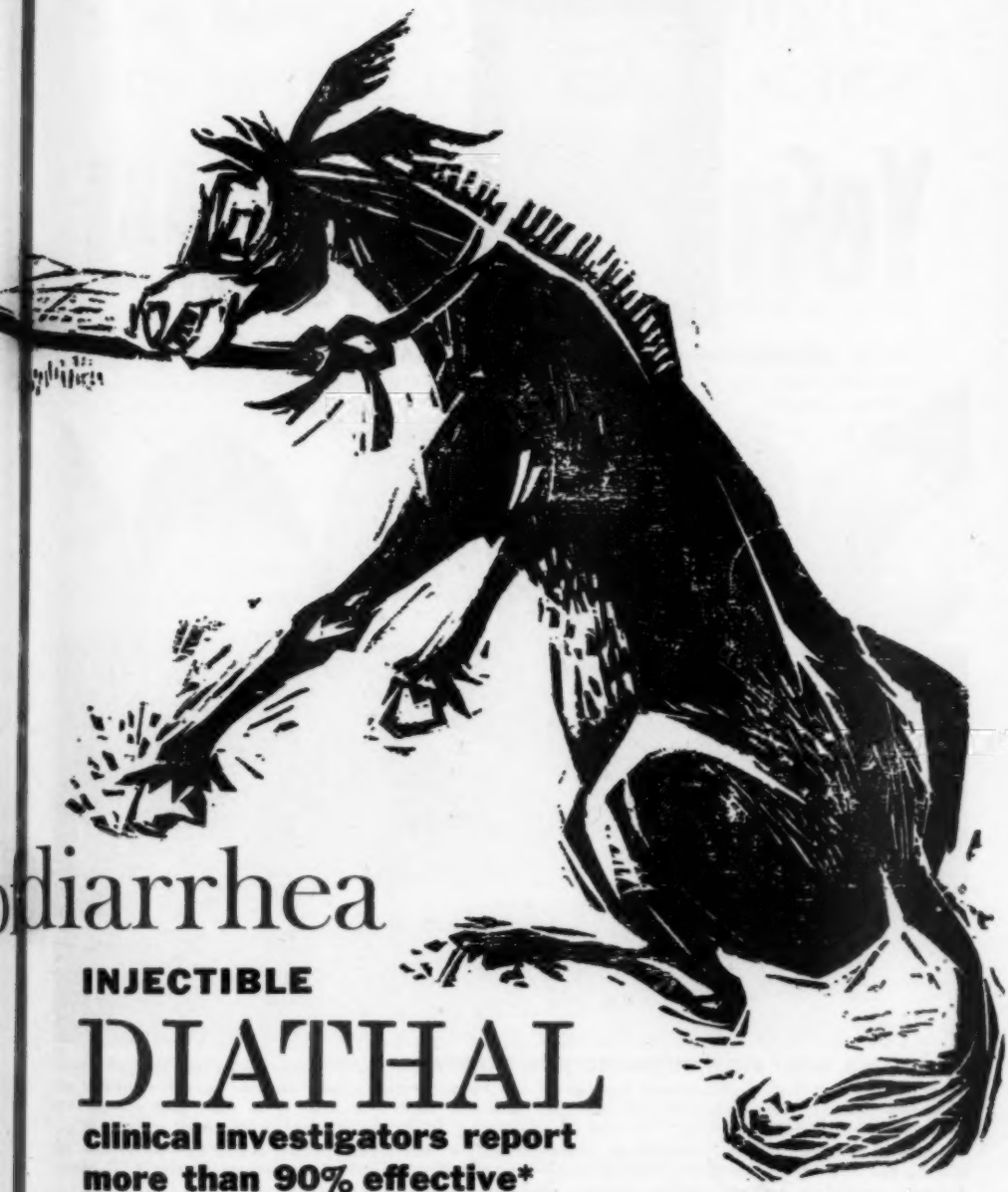

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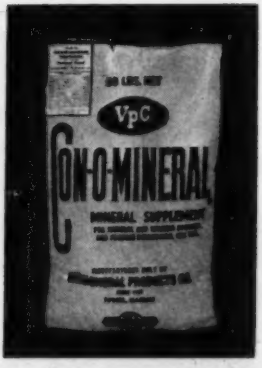

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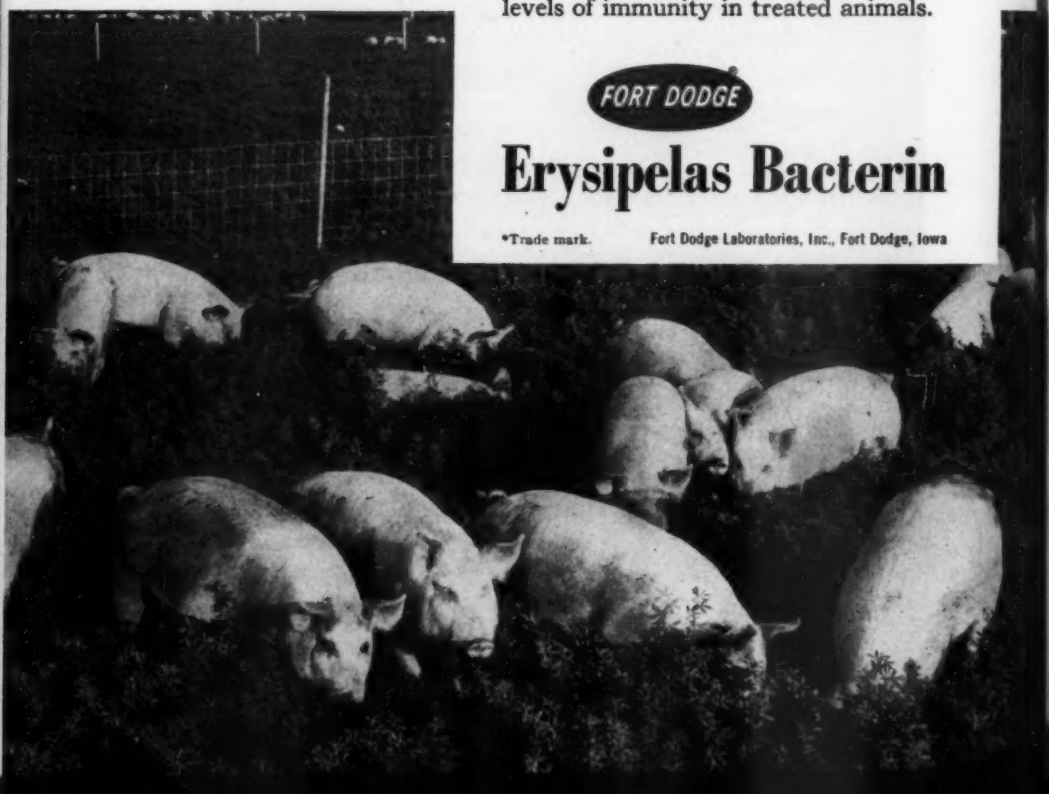

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Experiences in Veterinary Aspects of Public Health in Alaskan Eskimo Communities

KARL R. REINHARD, D.V.M., Ph.D.

Anchorage, Alaska

"MAN-BORNE" INFECTIOUS diseases currently constitute the major cause of death and disability among the native people in the arctic United States. However, problems caused by animal-borne infectious diseases arise occasionally and require both research and control work in the field and laboratory.

Most of my work among native people has been in Eskimo communities. The Eskimo people of Alaska are commonly considered "primitive," but this is true only in a technological sense. A hunting economy will not support a complex of elaborate and fuel-consuming utilities, nor will it allow major artificial alteration of the environment. Basically, the Eskimo culture is mature and complex in its language, beliefs, traditions, folklore, and social attitudes. As a race, these people are physically fit, mentally keen, good-humored, highly adaptive, and progressive. Despite considerable individualism, they are capable of enthusiastic, cooperative community activities. Their approach to life is positive and direct. Their villages are generally small (between 50 and 300 resi-

Fig. 1—Map showing Alaska, St. Lawrence Island, and related points.

Dr. Reinhard is a staff member of The Arctic Health Health Research Center, U.S. Public Health Service, Anchorage, Alaska.

dents). Most of these factors favor both research and applied phases of public health work.

Most of the veterinary public health work in native communities involves the sled dog and rabies. Although Eskimo communities commonly have twice as many dogs as people, no proved case of rabies among Alaskan natives has been documented. A rabies epizootic has considerable impact on public tranquility. The economic security of communities may suffer through loss of means for winter hunting and travel in the event that many dogs are lost due to this or any other disease such as distemper.

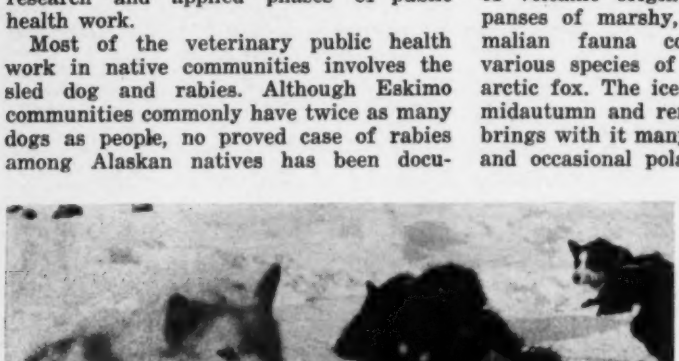

Fig. 2—Typical Siberian Husky sled dogs on St. Lawrence Island.

The Alaska Department of Agriculture has official responsibility for the health of dogs in native communities. Nevertheless, public health workers are frequently involved because of public health implications and because of general interest in disease processes and general responsibility toward public security and welfare.

A field study of distemper prophylaxis in arctic communities was previously reported.[1] The present report concerns canine rabies immunoprophylaxis study programs carried out on St. Lawrence Island in the winter of 1954 to 1955 and in February and March, 1959.

ST. LAWRENCE ISLAND

This island lies about 150 miles south of the Bering Straits in the northern Bering Sea (fig. 1). Geologically, it is composed of several small ranges of mountains of volcanic origin connected by flat expanses of marshy, treeless tundra. Mammalian fauna consists principally of various species of small rodents and the arctic fox. The ice pack, which arrives in midautumn and remains until late spring, brings with it many seals, herds of walrus, and occasional polar bears. A small remnant of a once-thriving reindeer herd roams the eastern end of the island.

All of the native people of the island are Eskimos, but almost all speak English learned from the missionaries and in public school. These people have come into close communication with the Alaskan mainland only within the past five years by virtue of scheduled mail-plane service to Gambell, on the west end of the island.

Travel to Savoonga, the other village on the island, is still by dog sled in winter or small marine craft in the open-water seasons. When inclement weather precludes travel, and atmospheric conditions prevent radio traffic, Savoonga is cut off entirely from the outside world. Curiously enough, in my experience, this isolation lends a comfortable feeling of ease and security—a kind of insulation against the pressures and distractions of mainland civilization.

The local native diet is comprised of an amazing variety of animal, vegetable, and marine life. The weather is the principal impediment of residents. Should storms, unusually mild weather, or unusually severe seasons change the pattern of

marine animal migrations, hunger can follow.

The domestic dogs are amazingly hardy animals. They may spend the first few weeks of puppyhood in the storm entry of a house, or in some makeshift shelter, but the rest of their lives are spent in the rigorous outdoors. From November until June, "home" is a hole in the hard packed snow. Winter temperatures frequently drop to −20 and −30 degrees F. When not working, the dogs are tied to a picket line with a 4- to 6-ft. length of chain.

In type they are Siberian Husky, characterized by light-colored gray green eyes. Most are medium-sized dogs (fig. 2) weighing between 40 and 60 lb. Their coats are dense, rarely shaggy, with a close-packed woolly coat beneath the guard hairs. The dogs tend to be blocky and compact in configuration. The face is relatively short and the muzzle sharp. The principle staple of diet is walrus skin, fat, and meat. However, should the walrus hunting fail or the cached supply become exhausted, the diet becomes varied and unpredictable, and may include seal, cereal, beans, birds, whale, or even the prohibitively expensive commercial dog meal.

The restraint of the picket line makes the dogs eager travelers, and their endurance on the trail is phenomenal. The average effective life span is only about 6 years; seldom over 10 years.

Rabies Control Program.—The natural history of rabies on St. Lawrence Island follows the general pattern found on the Alaskan mainland. The disease is enzootic in wild carnivores; in this case, the arctic fox. When the fox population becomes dense, the disease assumes epizootic proportions and the foxes transmit it to the dogs. Stray dogs help generate an explosive situation.

The rabies cycle has recurred on St. Lawrence Island for uncounted years. In the winter season of 1953 to 1954, after a cyclic increase in fox population, dead and live rabid foxes were seen by the residents during trapping and hunting activities. The epizootic reached major proportions late in 1954. Rabid foxes invaded the villages and trapping camps on numerous occasions and fought with dogs. Perhaps 30 or 40 dogs were affected. No exposures in man occurred.

A gratuitous experimental supply of chicken embryo-propagated vaccine was

Fig. 3—Positions for effective restraint and vaccination of dogs against rabies.

provided by Lederle laboratories. With the assistance of the town councils and local National Guard members, I vaccinated 500 dogs, approximately half the dogs in both towns.[2] Rabies in foxes underwent a natural decline and the numbers of foxes fell off abruptly after the winter of 1954 to 1955.

Through the remainder of 1955, and in 1956 and 1957, the fox population recovered from decline and eventually increased greatly. Consequently, epizootic fox rabies was again observed in the winter of 1957 to 1958. A few confirmed cases in dogs also occurred. The epizootic reached major proportions late in 1958 when rabid foxes again invaded the villages. Approximately 24 cases occurred among sled dogs. One child was attacked by a rabid fox. His trousers were torn but the skin was unscathed.

Stimulated by public sentiment and with the assistance of Commissioner James Wilson, Alaska Department of Agriculture, a field trip to carry out a rabies control program was undertaken in late February, 1959. The purpose of the trip was to accomplish the following in each village.

1) Meeting with village council—discussion of program objectives, natural history of rabies, principles of control, facilities, personnel, and procedures required.

2) General village meeting—the previous discussion duplicated.

3) Meeting with volunteer workers—discussion of care of vaccine and equipment, and techniques of dog restraint and vaccination (fig. 3).

Fig. 4—Volunteer workers on St. Lawrence Island reconstituting rabies vaccine and filling syringes.

4) Arranging and publicizing of vaccination schedule, based on dog owner and team census obtained by the council and volunteer aids.

5) Vaccination and registration of dogs.

6) Return meeting with town council to report on effectiveness of program.

In order to maintain good public relations, the itinerant nurse, missionaries, school teachers, sanitation aide, and National Guard commander were invited to all conferences and to aid in disseminating public information.

A great deal of emphasis was placed on the uncontrolled dog. Stray dogs are common, protected by apathy in some cases and ethnic tradition in others. They are usually young dogs which have not been integrated into teams or older dogs no longer able to work—also the "escape artists" who have slipped a collar or loosened a chain. The reluctance of owners to chain half-grown pups or to shoot faithful but decrepit old workers is understandable.

Since the town councils have limited, almost ineffective police powers, they must rely on public sentiment, rather than legal process, to enforce decisions. To press the issue for control, the stray dog was pictured in public meetings as a destructive villain who:

1) Carries rabies and Echinococcus infection which endanger human life, particularly children.

2) Carries rabies and distemper to the useful dogs.

3) Destroys or fouls human food and utilitarian articles.

4) Endangers children by direct attack.

5) Breeds into good dog lines, thus causing general deterioration of the dog population.

6) Fouls the community with excreta.

These premises were well received by the people, but will require continued repetition to stimulate continued public support of dog control.

In discussions of rabies control, it was emphasized that dog vaccination was only one part of an effective program. For the villages there should also be:

1) Development of a "buffer zone" against sylvatic rabies by year-'round trapping and shooting of foxes around the town for a radial distance of 3 to 5 miles.

2) Tying of all full-grown dogs and provision of corrals for all pups too young to be tied.

3) Destruction of all unowned, unused, and stray dogs.

4) Vaccination of all dogs over 6 months of age; yearly vaccination of new pup crops. Revaccination at three- to four-year intervals of dogs to be kept on working status.

The people were told about the grave

consequences of human exposure to rabid dog bites, the treatment of bite wounds, the necessity for seeking prompt medical attention, and the nature of prophylactic treatment. They were instructed in the safe handling and disposal of dogs and foxes suspected of having rabies and the safe packaging and forwarding of specimens.

The day before the actual vaccination, a brief training session was held with the volunteer workers. The parts, function, and handling of syringes were explained. The nature of the vaccine, its safe storage, means of reconstitution, and the keeping of records were taught.

In each town, the rate of vaccination outstripped the set schedule. Less than one and one half days were required to vaccinate 240 dogs in one town, and six working hours for 360 dogs in the other. Before vaccination of one dog team was finished, the next would drive up to the working area ready for vaccination. The owner and a volunteer worker would go down each string, administering the vaccine. Volunteer workers were busy reconstituting vaccine, filling syringes, making records, and cleaning and sterilizing syringes and needles (fig. 4).

Reconstitution of the vaccine was effected without the use of syringes. One end of a double-bitted "Vacutainer" bleeding needle was plunged into the inverted vial of water. Then the other end of the needle was plunged into the vial of powdered vaccine. The vacuum would allow all of the water to empty into the vaccine vial. For vaccination, 10-ml. syringes were used which would allow three injections per filling (three 3-ml. doses). Promptly after use, the syringes and needles were placed in water, flushed thoroughly, rinsed, and sterilized by boiling over a gasoline-fueled camp stove. Sterilized needles were packed in alcohol until re-use.

Since chicken embryo rabies vaccine should not be allowed to freeze, our supply was transported in insulated picnic-style ice boxes. To protect the vaccine during dog sled travel at subzero temperatures, benzene-fueled handwarmers, which can be purchased at any sporting goods store, were placed inside the insulated chest. The large ones will burn 24 to 36 hours. The drain plug of the chest had to be kept open to release the carbon dioxide and supply fresh oxygen for combustion.

Fig. 5—Technique and position used for intramuscular injection of the rabies vaccine in a dog on St. Lawrence Island.

Frequently, in subzero weather, the vaccine froze in the needle between successive injections. This usually caused only a slight delay, since the warmth of the dog muscle soon cleared the needle of ice crystals.

The owners were instructed to restrain the dog by straddling its shoulders and firmly holding the head and muzzle elevated and forward. To simplify location of the injection site, the vaccinators were instructed to stand to the left of the dog, reach over with the left hand and firmly grasp the front of the dog's right thigh with the heel of the hand resting in the flank and the index finger pointing toward the patella. The vaccinator was then to insert the needle in the middle of the back of the thigh and plunge it directly forward, toward the palm of his left hand to assure proper placement of the vaccine in the flexor muscles (fig. 5). Occasionally, a third person was needed to hold up the hindquarters and straighten out the leg of an apprehensive dog, or to hold a bushy tail out of the vaccinator's face.

CONCLUSION

The success of these operations indicates that preventive veterinary medical practices can be introduced and carried out in Alaskan native villages with minimum

professional supervision and with beneficial results for both people and animals.

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Veterinary Practice in Alaska

"Alaska, land of opportunity," is, in actuality, a land of opportunity only for the industrious. It is a young man's country. The average age of its non-Eskimo population is probably less and the educational level higher than those in the other 48 states. Opportunities for veterinarians are about the same as elsewhere. The prospective practitioner should consider population numbers, economic standing of the population, and the number of animals. Two important differences between Alaskan and state-side practice are the proportionately higher investments needed to start here and the fact that all drugs are ordered by mail, with consequently larger drug inventories.

Living might be called adventurous, but two of the ever-present problems, the long hours of summer and the depressing darkness of winter, can make "cabin fever" a reality. Prices are high and ordering is as can be imagined. Winters are mild here in Anchorage but seem to extend into both ends of summer. However, Alaska is a sportsman's paradise throughout the year.

The problems of practice are the usual ones; foremost is canine distemper. We seem to have a high number of "vaccine breaks" in this area, possibly due to the time required to transport biological products from Seattle. Probably the entity seen most frequently in our clinic is an infectious type of tonsillitis. At least a fourth of the animals examined have varying degrees of tonsillitis, ranging from mild cases causing little or no discomfort to severe cases with air-passage obstruction and generalized toxemia. We have seen what to us seems an unusual number of dogs with cystic calculi. Pyometritis is common also.

Five per cent of our practice consists of pleasure horses and, occasionally, an "exotic" creature of the wild. Cooperation among the practitioners, research men, and military veterinarians is on a high plane. Horse problems are primarily nutritional, due to failure of owners to feed them properly during the long winter months. Little things, such as treating the humeral fracture of a bull moose and preparing formula for an orphan seal pup, have helped to make practice in Alaska interesting for all concerned.—*J. D. Rasmusson, D.V.M., and Erik Barnes, D.V.M., Spenard, Alaska.*

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For many years, I was the only veterinarian in Alaska. As the first territorial veterinarian, it was my duty to call on all of the fur farmers to assist with their problems and to test the few head of dairy cattle for tuberculosis and brucellosis.

After World War II, the European fur market declined to nothing and the fox and mink growers went out of business if they had not already done so. There are now but three or four mink farms left in Alaska.

After the war, more and more perishable foodstuffs began to be flown into the territory and this was felt by the small dairy industry, for more and more dairy products came in by plane from the United States. Recombined milk has been the largest factor in closing the dairies, so that in the principal cities of Alaska only Juneau and Fairbanks still have operating dairies. There are about 1,200 head of cattle in the Matanuska Valley.

There were never many horses in Alaska. At present, there are about 50 in the Anchorage area and a few scattered along the railroad line in the hands of guides, but even guides are relying more each year on planes to take parties into the hunting areas.

The towns and villages of Alaska are much too small to support a veterinarian. There are four veterinarians in practice in Anchorage, in addition to the military veterinarians. There is one veterinarian in Fairbanks. The territorial veterinarian is stationed at Juneau, and there is one practitioner in Palmer in the Matanuska Valley who is subsidized by the state to test the dairy cattle in that area.

There is no real agriculture here and it will probably be many years before their is industry of any kind. At one time, there were several attempts made to produce

swine by utilizing garbage from the military installations but all except one of the feeders have quit.

There are no serious veterinary problems for the reason that there are few animals. Distemper is the most common disease of dogs, and in the past few years, "hard pad" has appeared in increasing numbers. The incidence of hepatitis is also increasing.

Of the internal parasites, Ascaris and tapeworms are the most prevalent. Hookworms are not often found in dogs here, but are common in foxes. Now and then coccidiosis is found, mostly in the toy breeds which have been purchased in pet shops either here or in the United States. Infectious feline enteritis is prevalent.

There is no poultry industry in Alaska. There are, of course, a few chickens but eggs cannot be produced in successful competition with eggs from the United States.—*Earl F. Graves, D.V.M., Spenard, Alaska.*

Cannibalism in Confined Swine

Cannibalism or tail biting has become a major problem with hogs raised in confinement. The basic cause is believed to be an anemia which seems to be due either to a hemolytic Streptococcus infection, iodine deficiency, bloodsucking parasites such as the stomach worm, or to a combination of these ailments. It usually starts when the hogs weigh 100 to 140 lb. and may result from a craving for blood or simply from a depraved appetite.

If there is only 1 tail biter, it is apt to be the only 1 with a full tail and will also probably show anemia. The Streptococcus infection is usually indicated, at necropsy, by mottled kidneys. It is treated with 1 lb. of sulfanilamide in 300 lb. of feed for five days.

The iodine deficiency results in enlarged thyroid glands and is treated with 1 lb. of organic iodine in 500 lb. of feed for five days.

The internal parasites are treated with 1 lb. of phenothiazine per 100 lb. of feed for 24 hours. This line of treatment usually results in improvement after two days.

If the tails are somehow protected, the biters may change to ear biting. If the hogs are moved to pasture, the offenders may start excessive rooting. If 1 of the victims becomes so weak from loss of blood that it merely lies and squeals, the whole group may turn on it in cannibalistic style. —*Richard A. Spring in Nat. Hog Farmer (May, 1959): 1.*

Actinobacillosis in a Dog's Mouth

An abscess, about 4 cm. in diameter, with a tuberous surface was excised from the ventral surface of the base of the tongue of a 9-month-old dog in Hungary. *Actinobacillus lignieresi* was isolated in pure culture from the pus. The wound healed completely.—*Magyar Allator. Lap. (Jan., 1959): 31.*

Survey of Horses on Farms

A survey made in Iowa recently indicates that slightly over 2 per cent of the farms still have a few draft horses. Many of them, however, were "pensionees" on pasture. Nearly 15 per cent of the farmers had a riding horse, and 10 per cent had ponies for the children.—*Wallace's Farmer (May 2, 1959): 36.*

Impact of Vertical Integration

Integration in livestock production appeals to many farmers. The veterinarian's relationship with the livestock owner will inevitably change as integration becomes more common. His new status probably will be more that of a consultant, hired on a contract or retainer basis. As an adviser, he would probably work less with individual animals, although on the whole it seems likely that more and more animals will come under the watchful care of a veterinarian.

Some veterinarians have voiced the opinion that integration will tend to reduce the number of veterinarians, that those less able to compete will be forced out of the field. However, others believe that a strong program of preventive medicine, on a wide scale, would actually increase the demand for practitioners.

Whatever the effects of vertical integration on the profession, the individual would do well to reconsider aspects of his present practice before integration comes to his area, so as to be ready to meet the challenge and serve his clients.—*C. D. Van Houweling, D.V.M., Washington, D. C., at 1959 Meeting of the Ohio State V.M.A. in Columbus.*

Vertical Integration in Livestock Production

FOREST L. GOETSCH

St. Louis, Missouri

THE DEVELOPMENT of vertical integration in agriculture is one of the really significant happenings for farmers of the twentieth century. Eventually, it may change the entire business structure of the nation's farms, tying them in more closely with suppliers and processors in the new concept known as "agribusiness."

Vertical integration can generally be defined as the combining of more than one stage in production, processing, or distribution under one management. This combining can come about through outright ownership of two or more of these stages. For instance, a meat packer may own a feedlot in which he feeds cattle to be processed in his own slaughterhouse.

This control may also come about through the use of contracts, the most common development in recent years. Since many persons were not familiar with the economists' term "vertical integration," we coined the term "contract farming" to cover this type of situation.

CONTRACT FARMING

Contract farming has been used in the field of specialty crops for many years. Sugar beets are all grown under contract, as are a large portion of the tomatoes, sweet corn, and other fresh vegetables used for canning purposes. This assures the canner a supply of raw material and guarantees the producer a market for his perishable crops.

Poultry Production.—Since World War II, broiler contract programs have been developing in the South and East. Today it is estimated that 95 per cent of all broilers are grown under contract.

To begin with, they were strictly feed-financing programs; then they expanded to where chicks were also put out on credit. The feed business being competitive, it became necessary for all companies to offer this complete financing in order to keep their mills going.

The owners of these broilers needed some safeguard of their investment, so contracts were developed that set forth the rights and obligations of both parties. The concept changed from one of feed financing to one in which the feed and the chicks belonged to the "integrator" and the farmer was just doing the work and furnishing the buildings and equipment.

At this point, much of the decision making passed from the hands of the farmer to the feed dealer, hatcheryman, poultry processor, or whoever owned the birds. The owner developed a complete management program for the farmer to follow and sent trained field service men to check on the birds. It became their primary responsibility to see that these flocks were healthy and profitable for their owners.

If the farm producer found some dead birds in the house, he didn't call a veterinarian, he called the field service man. In fact, in many areas they told us that few veterinarians were familiar with poultry diseases, so the companies trained their own men in preventive measures and treatment.

Egg Production.—During the past year, contract farming has moved ahead faster in the egg business than in any other phase of agriculture.

Cooperative egg-marketing programs were probably pioneered by the poultry producers of central California. More recently, similar plans were developed in New Jersey and Iowa. Basically, this arrangement calls for the farm producer to market most of his eggs through the cooperative which pays him a premium over a certain market. There are strict quality requirements. If the cooperative makes money, the farmer gets a dividend at the end of the year. In this case, the cooperative is the integrator but the farm producer owns a part of the cooperative. Many farmers lean toward this approach in meeting the issue of vertical integration in agriculture.

The biggest growth in egg contracts has been with private companies, however. The first such plan was the Kansas "package" egg program that started about three years

From an address given at the annual meeting of the Missouri Veterinary Medical Association, St. Louis, Mo., Feb. 27, 1959. Mr. Goetsch is manager, Publications Division, Doane Agricultural Service, Inc.

ago and guaranteed producers a minimum price per dozen. The price of eggs dropped and the egg processor lost so much money that he couldn't fulfill his contracts. The farm producers ended up owning a part of the business and having a man on the board of directors.

The contract in this case has since been modified so that it calls for a premium over the Kansas City market price. The farmer buys started pullets and pays for them out of his income from eggs. Financing is also arranged for him to buy necessary buildings and equipment, usually through FHA.

WHY INTEGRATION?

There are basic reasons why contract farming developed in poultry raising and, more recently, in swine production and other areas.

While the feed companies first put contracts into operation, they are not primarily responsible for integration. If it had not been economically sound, it would have passed out of existence in a short time.

In the case of broilers, there was a need for improvement in the product in order to appeal to the consumer. The same is true of eggs and pork.

Why is the farmer interested in signing a contract? In some cases, he needs financial assistance to obtain his feed, poultry, or livestock. Also, he often needs the new houses or equipment that are a part of the modern production systems worked out by integrating groups. With a contract, he is in a better position to obtain loans.

In new production areas, farmers may be glad to get the help of a trained service man. This was true when southern cotton and tobacco farmers started raising broilers and finishing out feeder pigs.

Lower costs of production have almost always resulted, partly because feed companies have provided better balanced rations, including proved additives. The latest management methods were also a part of the program. This lower cost of production has enabled the integrator to stay in business when the "independent" could not.

Farming is a high-risk business, with huge investments and large annual cash outlays. Young farmers, in particular, are interested in contracts so the risk is shared.

Assuring themselves of a market may be one of the reasons that farmers sign contracts. Today, the supermarkets handle the bulk of the food business. They use specification buying to meet consumer demands.

SWINE PRODUCTION

Pork has not fared well on the self-service counter of the supermarket. Everybody has been talking about "meat-type" hogs but few have done much about getting them until the last couple of years. Packers have said we ought to have them and farmers have said you ought to pay us more premium. In the meantime, consumers have bought more broilers and more beef.

The wide fluctuations in the seasonal supply of hogs have been a serious financial problem for packers. In 1959, packers will be asked to kill 5.8 million hogs in June and 8.1 million in October. They have the same size plant, the same equipment, and same number of personnel both months.

Along with the need for better quality and a uniform supply has come the development of the new system of confinement raising of hogs. These three factors have stimulated contract farming in swine production.

One of the first such contracts was developed in the South for use with "pig parlors," which are not necessarily involved with contract farming. However, this system of production lent itself to a plan whereby the feed dealer supplied feeder pigs and the complete ration, with the farmer receiving a flat payment per pound of gain.

A recent U.S.D.A. publication[1] states: "With a feeder pig contract, the integrator, who is frequently a feed dealer, supplies the pigs and their feed. He also handles management problems, takes care of veterinary expenses, and later takes the hogs when they are ready for market."

In one plan, the farmer agrees to use certain commercial feeds but can supply his own grain. When the hogs reach a certain weight, the farmer is to deliver them to the packing plant where they are graded on a rail basis. On all hogs qualifying as meat-type, he will be paid a premium of 50 cents per hundred. For those not qualifying, he will receive market prices.

This program is developing slowly, with multiple farrowing to provide a more uniform supply of hogs throughout the year.

Feeder pigs are also being produced

[1]U.S. Dept. of Agric.: Contract Farming and Vertical Integration in Agriculture. Agric. Information Bull. No. 198, July, 1958.

under contract. There appears to be a trend toward specialization in swine growing—one group producing breeding stock, another raising feeder pigs, and still another group finishing them for market.

CATTLE FEEDING

Contract cattle feeding has been done for years in many areas. It is a form of integration, especially where a packer owns cattle and has them fed for him in a custom feedlot. Also, in some cases, the feeder is selling his fat cattle in advance for a stated price, in order to cut the risk from falling prices.

There has been fairly rapid growth of the commercial feedlots in the West and Southwest, where an increasing proportion of the cattle are finished and slaughtered.

For the veterinarian, this will create a somewhat different type of client relationship than now exists. One company has a program of artificial insemination of beef cows, using production-tested sires. The aim is to obtain a sure supply of the right type of steers for the future. The company supplies semen and the technician to do the insemination, at no cost to the rancher. In turn, the rancher contracts to sell his calves as weanlings or yearlings to the packer at a premium.

DAIRY COW POOLS

One of the first dairy cow pools was in Utah. Another, in Iowa, has about 800 cows. Thus, tank trucks can load the milk at one location instead of picking it up at several farms. Also, the milk will qualify as grade A without each farmer having to invest in costly milk parlors and bulk tanks. These savings supposedly amount to $0.60 to $1.00 per 100 lb. of milk.

The cow owners pay for the feed and other expenses of their cows on a pro-rated basis. They pay the farm $30 per year per cow to cover costs of buildings, equipment, and for profit. They can sell their hay and grain to the pool if they wish.

Since the farmers keep their dry cows at home and have them freshen there, there would be need for a veterinarian's services at the individual farms. However, the cow pool would need a full-time veterinarian, part of whose services would be insemination of the several hundred cows.

Another integration possibility in dairying is the raising of dairy heifers under contract to be sold to dairy pools. One farmer buys heifer calves or yearlings and raises them until they are about to calve. Another specializes in operating the milking herd with no calves to worry about.

CONCLUSION

There will probably be more integration of the livestock and poultry industries. Confinement systems of production, usually a part of these contract programs, result in concentration of livestock and poultry which can create serious animal health problems. Veterinarians will no doubt be called upon to play a major part in making these new production programs successful.

Demonstration of the Nymph of *Linguatula Serrata* Frolick, 1789 in *Sylvilagus Floridanus* from North Central Oklahoma

EVERETT D. BESCH, D.V.M., M.P.H.

Stillwater, Oklahoma

The nymphal stage of *Linguatula serrata* in the cottontail rabbit, *Sylvilagus floridanus*, has not been reported previously from Oklahoma. A survey of parasites from 42 of these rabbits collected from central Oklahoma did not include this parasite.[4] The cottontail rabbit was shown to be a suitable intermediate host, however, when nymphs were found in 20 rabbits in Alabama.[3] One of these had 65 nymphs of *L. serrata* in the mesenteric ganglia, 11 in the liver, and more than 75 in the lungs, but the average number found per host was 35. These figures exclude prenymphal stages and calcified forms.

The rabbit concerned in this report was collected during August, 1958, from the grassland area south of Pawhuska, Okla. It was examined for parasites within four hours after collection. One nymph* was recovered in the residue of the warm saline solution in which the teased lungs of the rabbit had been placed. The body organs of another rabbit, collected from this same

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*Identification as Linguatula serrata was confirmed by Mr. Allen McIntosh, Animal Disease and Parasite Research Division, U.S.D.A.

area, were examined but no nymphs were found.

Nymphs of *L. serrata* are said to be capable of freeing themselves from their cysts spontaneously upon death of the intermediate host. Furthermore, it is stated that freed nymphs perish after two and one half to three days at 18 C. room temperature, but they are able to resist destruction in lung tissue for 15 days when kept at a temperature of 2 to 3 C. Apparently the change in the tissue oxygen potential furnishes the stimulus for the nymph to free itself from the cyst. The longevity of nymphs has not been established, but in the same report,[2] it is stated that living, infective nymphs of *L. serrata* were removed from guinea pigs which had been infected for two and one half years. However, in this case, the cyst wall was thickened and the liberation time was protracted.

Although the migratory route of this parasite in the intermediate host is not clearly understood, it is stated in one report[1] that the egg, upon entering the small intestine, loses its outer coverings by the action of the digestive juices, and the embryo is set free. By means of a penetrating apparatus and clawed limbs, the embryo pierces the gut wall and is apparently carried by the blood and lymph streams to some organ of the body where it becomes encysted and undergoes a series of larval ecdyses.

Linguatula serrata has a wide definitive, as well as intermediate, host range. Nymphs have been found in man, the long-eared hedgehog, cat, black rat, brown rat, crested porcupine, cavy, common hare, common rabbit (*Lepus cuniculus*), cottontail rabbit, horse, ass, ox, domesticated goat, sheep, pronghorn antelope, South African blue Duiker, Bubal antelope, roebuck, European fallow deer, Arabian camel, domestic pig, and the collared peccary.

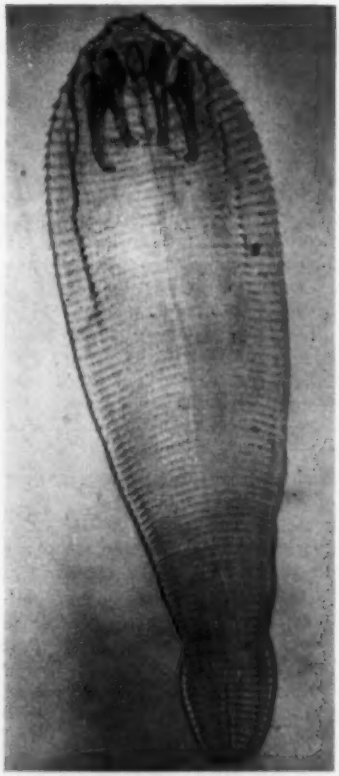

Fig. 1—The body of the nymph of Linguatula serrata is 3 to 6 mm. in length and is divided into 80 to 90 rings, each ring being bordered posteriorly by a row of closely set spines. Two pairs of hooks are located near the anterior end of the nymph; the mouth is situated between the anterior-most pair of hooks.

CONCLUSION

To better understand the importance of this parasite in the United States, the distribution and abundance of *Linguatula serrata* in the intermediate and definitive hosts should be studied. Attention should be given to the examination of wild carnivorous animals, especially the fox and coyote, to determine their role as reservoir hosts. The coyote, unlike the fox, apparently has not been listed in the definitive host range of this parasite but should be considered a possibility because of its food habits.

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Surgery and Obstetrics
and Problems of Breeding

Surgical Correction of Congenital Incontinence in a Pup—A Case Report

ALBERT SINGER, V.M.D.

Morris Plains, New Jersey

In July, 1958, a female mongrel pup, 10 weeks old, was examined because of the continuous presence of urine on both the vulva and the end of her stubby tail. A foul urine odor was quite evident and the skin of the vulva was irritated and swollen and had shreds of mucus on the surface. Examination of the vaginal vault revealed merely a pool of urine.

The owner, informed that the cause was apparently congenital, requested either euthanasia or experimental treatment at our expense.

About a month later, a laparotomy was performed in order to determine the exact cause of the incontinence. It was found that the right ureter did not empty into the bladder, but rather into the body of the uterus, thus accounting for the continuous flow of urine into the vagina. Rather than attempt to transplant the ureter into the bladder, the right kidney and its ureter were removed in entirety.

The pup was active and alert on the first postoperative day and has remained so ever since. The continuous flow of urine has ceased and the skin of the vulva healed rapidly without topical treatment.

Dr. Singer is a general practitioner in Morris Plains, N.J.

Prolapsed Uterus and Rectum in a Sow

Two days after a sow farrowed 11 pigs, her rectum prolapsed. The owner replaced it by lifting the posterior part of the sow, but it recurred in a few hours. When examined, the swollen and cyanotic prolapse was 15 cm. long, with severe necrotic lesions. The sow would eat, but moved little, and her temperature was 104 F. (40 C.).

Since reduction was not possible, excision of the rectum was started. However, part of the horn of the uterus was found in the prolapse and could not be reduced. The abdominal wall was then incised, a hand introduced, and the horn was drawn into the abdomen and out through the incision where it was found to be uninjured. It was then replaced, the laparotomy wound sutured, and the excision of the rectum was completed.

The sow was given penicillin for four days. The pigs were given cow's milk for two days, after which the sow nursed them satisfactorily.—*M. B. Nemadic in Vet. Glasnik, 13, (1959): 134.*

Attempted Hormonal Castration of Boars

Boars given stilbestrol showed no increased growth or breeding activity. However, doses of 2 to 4 mg./kg. of body weight resulted in degeneration of the testicles without affecting the animal's libido. This degeneration was greater in the younger than in the older boars. Even the smaller doses resulted in the disappearance of the urine-like odor from boar meat for about two months.—*Vet. Glasnik, 12, (1958): 344 (abstr. in Die Vet.-med., 11, (1958): 586.*

Insemination of Sows

During the first ten months of operation, a small insemination service for sows used 2 boars both as donors and for natural services. Between 100 and 180 ml. of semen diluted from 3:1 to 1:3 was used for each sow or gilt within one to six hours after ejaculation.

The number of services per conception was not much higher for 80 inseminated sows (1.56) than for 30 naturally-bred sows (1.32). The litter size averaged 11.65 for sows and 8.37 gilts which were inseminated, compared with 8.42 and 6.0 respectively for naturally-mated animals. This difference could not be explained.—*Vet. Bull. (March, 1959): Item 873.*

Superovulation After Gonadotrophic Treatment for Sterility

Of 83 cows which conceived within three weeks after being treated with pregnant mare's serum (P.M.S.) alone or combined with chorionic gonadotrophin (P.U.), 21 (25%) gave birth to more than 1 calf (including triplets and quadruplets). There was no increase in twinning in cows treated with P.U. alone.—*Vet. Bull. (March, 1959): Item 892.*

What Is Your Diagnosis?

Because of the interest in veterinary radiology, a case history and radiographs depicting a diagnostic problem are usually published in each issue.

Make your diagnosis from the picture below—then turn the page ▶

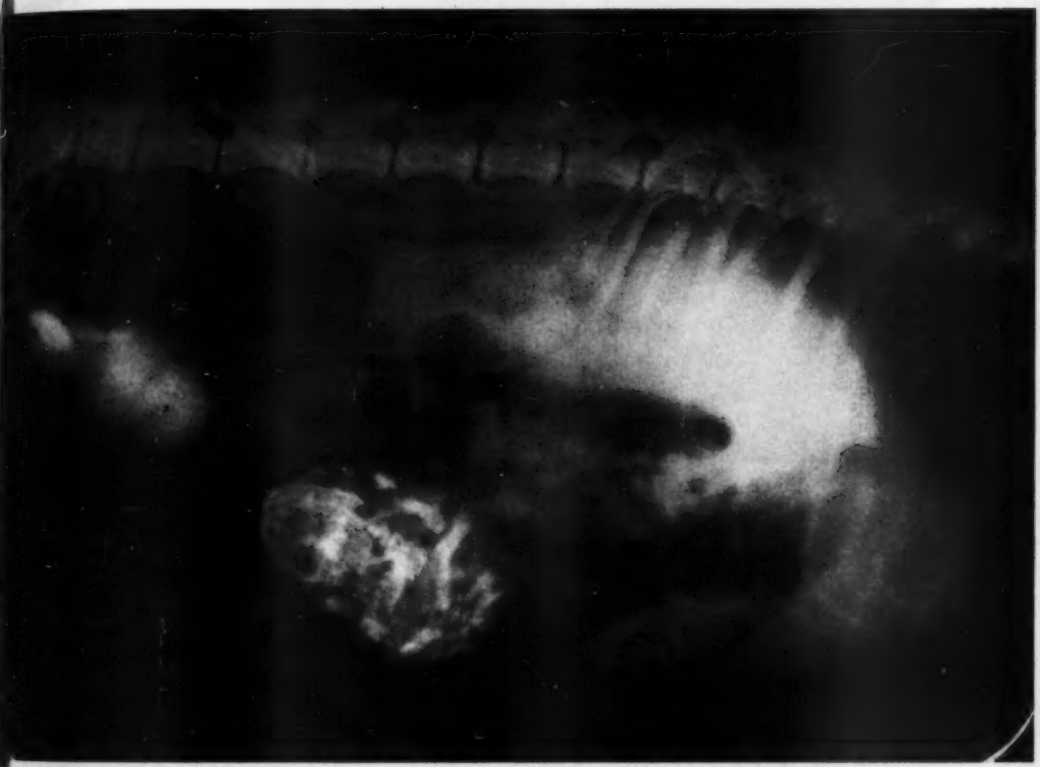

Fig. 1—Radiograph, lateral recumbent view of abdomen of the Cocker Spaniel.

History.—A female Cocker Spaniel, 11 years old, was troubled with frequent urination and hematuria. Two large masses were palpated in the abdomen. One was in the area of the urinary bladder and the other on the floor of the abdominal cavity midway between the xyphoid cartilage and pubis. The dog had shown no discomfort until the urinary signs appeared. A lateral recumbent radiograph was taken (fig. 1).

Here Is the Diagnosis

(Continued from preceding page)

Diagnosis.—Multiple calculi of the urinary bladder and a mummified fetus in the peritoneal cavity.

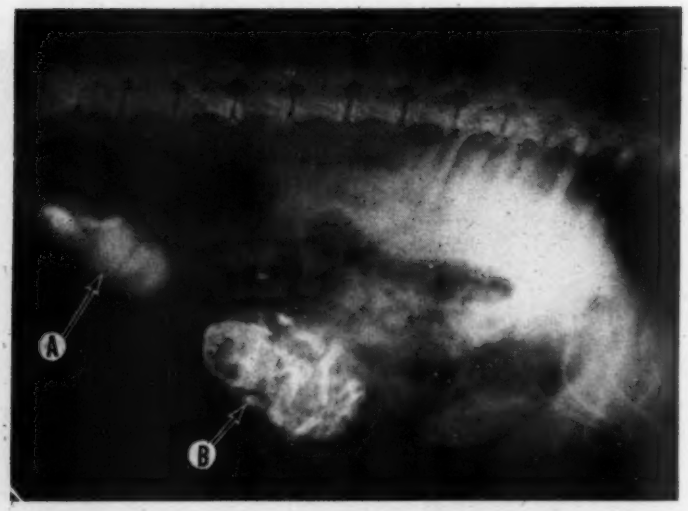

Fig. 2—Radiograph, lateral recumbent view of the Cocker Spaniel showing urinary calculi (A), mummified fetus (B).

Comment.—The presence of multiple uroliths of the urinary bladder is not unusual but an extrauterine fetus is infrequently found. This one was dehydrated, covered by a thin, fibrous membrane which was attached to the omentum, but there were no signs of current inflammation.

The owner said that the dog had not been in heat for at least ten months and, to his knowledge, she was not bred nor were any signs of illness or other disturbances, such as false pregnancy, noticed until she developed urinary distress. The anterior mass had been discovered at a routine examination several months previously, but the owner wanted nothing done about it as long as the dog remained well. On laparotomy, the calculi and fetus were removed. The uterus appeared normal, with no evidence of a rupture. It could not be determined how or when the fetus became misplaced.

This report was submitted by Drs. L. E. Griffith and Ben Griffith, Nashville, Tenn.

Our readers are invited to submit histories, radiographs, and diagnoses of interesting cases which are suitable for publication.

A Review of Recent Findings in Infectious Diseases of Sheep. I. Virus Diseases

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DURING THE PAST several years, a number of new diseases of sheep have appeared in various parts of the world, while some of the long recognized infections have spread in rather alarming proportions to countries wherein they did not exist previously.

Of most immediate concern to the veterinary profession and to those associated with the livestock industry in the United States are the conditions that now exist in this country. However, in view of the ease by which infectious agents can now be disseminated by modern methods of global transport, there must be an awareness of the existence of exotic diseases, a knowledge of their clinical manifestations, and a realization of the potential threat that they pose to the livestock industry of this country.

ENZOOTIC ABORTION OF EWES

A syndrome characterized by premature lambing and abortion has been recognized in Scotland as a distinct disease entity. It is caused by a new member of the psittacosis-lymphogranuloma-venereum (P-L-V) group of viruses, and was named "enzootic abortion of ewes" (EAE).[29] Later, the condition was reported from France[5] and Germany[20] and recently from Montana.[35]

The disease is characterized by premature lambing and abortion. The ewe remains clinically normal except in cases in which the fetus dies and is carried for some time. In such instances, the ewe may lose condition and die within a few days of aborting. Ewes that give birth to living lambs or fetuses that die just before term show no ill effects. Abortion and premature lambing usually take place during the last two or three weeks of pregnancy, although abortions may occur as early as six weeks prior to full term.

In previously unaffected flocks, and in flocks containing a high proportion of young ewes, from 25 to 30 per cent of the ewes may abort or lamb prematurely. However, since abortions or premature lambings are followed by normal subsequent ones, the incidence of the infection in a flock drops appreciably in subsequent years.

EXPERIMENTAL STUDIES

Abortion in ewes was produced in Scotland by the parenteral inoculation of pooled unfiltered suspensions of liver, spleen, kidney, lungs, and stomach contents of aborted fetuses. Filtered suspensions of aliquots of the same materials failed to cause abortion. Since the placental membranes of the inoculated ewes had macroscopic changes somewhat similar to those of *Brucella abortus* infection, smears were prepared and stained by a modification of the acid-fast technique. Examination of the slides revealed the presence of small, coccoid microorganisms which were subsequently shown to be the elementary bodies of a hitherto undescribed member of the P-L-V group of viral agents.

The virus was shown to be present in great concentrations in the amniotic and uterine fluids and in the uterine mucosa, but it could not be recovered by chicken embryo inoculation from the fetal tissues. It was concluded, therefore, that the virus is either absent in fetal tissues or present in such a low concentration as to be unrecoverable by this technique. The fact that abortions were produced by the inoculation of the tissues and stomach contents of aborted fetuses was accounted for on the basis that only a small amount of virus is required to produce abortion, or that the tissues were contaminated during autopsy with virus from the fleece which had been contaminated by contact with the infected fetal membranes.

The virus from the uterine contents of infected ewes was readily cultivated in the yolk sac of embryonating chicken eggs and killed the embryo in four to nine days. The virus was found also to infect mice by intranasal inoculation, producing extensive lung consolidations; elementary bodies were readily observed in impression smears

From the School of Veterinary Medicine, University of California, Davis.

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stained by Macchiavello's and Castaneda's methods.[29]

Ewes inoculated with the yolk sac-propagated virus showed a febrile reaction which lasted for three days following inoculation, but they otherwise remained normal.[11] Inoculation with the virus prior to service resulted in subsequent abortion in a number of the inoculated sheep, while ingestion of the virus by pregnant sheep also resulted in abortion. The fetal membranes of aborting ewes and of most prematurely born lambs displayed irregular areas of thickenings in the chorion, with adherent exudate on the interstices. The cotyledons varied in color from dark red to dull gray and showed marked necrosis. Histological sections of diseased cotyledons also showed extensive areas of necrosis. The uterine mucosa and cotyledons, however, appeared normal.

A complement-fixation test was developed in which infected yolk sac and fetal membranes from experimentally infected ewes are employed as antigen. By means of this test, complement-fixing antibodies were demonstrated in the serums of sheep within two weeks of aborting, and were found to persist for at least four months. A serological survey revealed that the rate of infection is higher than clinical evidence would indicate. Tests conducted on a limited number of rams showed them to be free of antibodies, although positive reactions were obtained in lambs and virgin ewes.[30]

However, since other viruses of the P-L-V group are known to infect sheep,[9,15] and since members of this group of agents cannot be differentiated by means of the complement-fixation reaction, we feel that this test probably has dubious value in survey studies designed to determine the incidence of infection with one particular member of this group of viruses.

DIAGNOSIS

Although abortion and premature lambing are the most prominent features of the infection, clinical signs are not infallible diagnostically, since the ewe may be infected and yet the lamb be born at term and be quite vigorous.

The appearance of the fetal membranes has some diagnostic value. However, the demonstration of elementary bodies in stained smears of the expelled membranes and the uterine exudates, or the isolation of the virus constitutes positive evidence of infection. Since serum antibodies do not appear until two weeks after abortion has occurred, the complement-fixation test is useful mainly as confirmatory diagnostic procedure.

PREVENTION AND CONTROL

Enzootic abortion of ewes can be prevented by a vaccine which consists of a formalin-inactivated suspension of infectious yolk sac. A vaccine also has been prepared from the fetal membranes of experimentally infected ewes. The usual practice is to give two injections to each animal either prior to, or following, service. Both vaccines appear to be equally effective.[11] There is at least one report regarding the efficacy of antibiotic therapy.[21]

At present, little is known regarding the manner in which the virus is maintained and spread.

ABORTION IN SHEEP DUE TO THE WESSELSBRON VIRUS

Abortion and newborn lamb mortalities result in heavy economic losses in the Union of South Africa.[1] Rift Valley fever (RVF) was a major contributing factor until a vaccine for the disease was developed and used extensively throughout the Union. Continued losses on a reduced scale demonstrated that there were still undetermined causes of abortion and lamb mortality.

In 1954, a disease reported from the Orange Free State resembled RFV in that it swept through a large flock of sheep, causing abortion and some deaths in ewes, and death of newborn lambs.[34] Since the ewes had been vaccinated two weeks previously against RVF, it was thought possible that the vaccine virus might have been the cause of the outbreak. Accordingly, an investigation was immediately initiated.

EXPERIMENTAL STUDIES

From the brain and liver of a lamb that was sent to Onderstepoort for examination, a viral agent was recovered by the intraperitoneal and intracerebral inoculation of baby mice. Subsequently, it was found that it could be cultivated in embryonating chicken eggs but death of the embryos was inconstant. Since serum neutralization and protection tests indicated that the virus was serologically and immunologically distinct from the RVF virus, it was considered a hitherto undescribed agent and, accordingly, was referred to as the Wesselsbron

(WB) virus, after the name of the district in the Orange Free State from which it was obtained.

It was found that newborn lambs could be readily infected by parenteral inoculation of the virus, followed by death in some cases and recovery in others, while in older lambs, only a fever resulted. Ewes inoculated while pregnant occasionally gave birth to lambs that remained clinically normal. In the majority of cases, however, the ewes aborted and some died. Others carrying full-term lambs also died. In most cases, the virus could be isolated from the aborted fetuses. However, it could not be recovered if the lamb was born prior to, or during, the febrile period in the ewe, thus suggesting that the virus produces abortion only after invading the fetal tissues from the body of the dam.

Horses, cattle, and swine, following inoculation, reacted only with a fever of short duration. Pregnant members of these species were not inoculated, but rabbits and guinea pigs aborted following inoculation, and virus was recovered from the fetuses.

Livers of lambs infected with WB virus are characterized by degenerative changes consisting of a diffuse necrosis of the cells, accompanied by marked karyorrhexis and infiltration of leukocytes. The livers of infected ewes are pale and friable, and are characterized by the degenerative changes observed in the livers of infected lambs.

Man can be infected by the WB virus. This was amply demonstrated by an outbreak of the infection that occurred in a group of laboratory workers following inadvertent exposure while working with the agent. The infection in man is characterized by fever and accompanied by rigors and acute general muscular pain similar to that of RVF. Virus was isolated from the blood during the febrile stage of the infection, and antibodies to the virus were present in all who had a clinical attack of the disease. Antibodies also were present in those who did not experience a clinical episode but who handled high level passaged virus. In a field outbreak which occurred in 1956 in the Orange Free State, most of the personnel in charge of the flock in which the infection occurred became ill.[2]

PRESENT STATUS AND OUTLOOK

Thus far, there have been several outbreaks of the disease reported, although a serological survey indicates that antibodies to the virus are usually present in sheep, and to some extent in cattle, in Southern Africa, including Northern and Southern Rhodesia and Nyasaland. In Zululand, there were isolated two strains of a virus so closely related antigenically to the WB virus as to be considered identical.[28] One was recovered from a native undergoing a clinical attack of disease, and the second from a suspension of trapped mosquitoes collected in the same area. It was established also that the virus is mosquito-transmitted.

Since the WB virus is insect-transmitted, regulatory measures are of no value in controlling the infection. Preventive measures have not as yet been developed because of the short lapse of time since the disease was first recognized. The fact that the virus appears to undergo modification by serial passage in mice and chicken embryos is a hopeful sign insofar as concerns the possible development of a modified live virus vaccine similar to the one used for RVF.

BLUETONGUE

Bluetongue is recognized as a disease of considerable importance to the sheep-raising industry of this country since the virus was isolated in 1952 in California.[16] According to the latest report from the Animal Disease Research Laboratory of the U.S.D.A.,[10] the disease has thus far been diagnosed clinically, and with laboratory confirmation, in 12 states; from Missouri in the east, Nebraska in the north, California in the west, and Texas in the south. It has spread progressively to previously unaffected states since 1952. The disease recently appeared for the first time on the European mainland in Portugal[4] and later in Spain.[6] There is at the present time considerable concern that it may become widespread in Europe.[33]

Much of the effort for some time following the recognition of the disease in the United States was devoted to obtaining a more comprehensive knowledge of its clinical manifestations, to the development of immunizing procedures, and to confirmatory diagnostic studies.[12,13,17,23] Before elaborating on studies that were carried out subsequently, one precaution in regard to immunizing against bluetongue should be re-emphasized.

Some ewes vaccinated in 1954, when the vaccine first became available, gave birth to malformed and, occasionally, dead lambs,

simulating the syndrome observed earlier in sows that were vaccinated during early pregnancy with modified hog cholera virus.[25] A systematic survey, which included a statistically significant number of sheep, indicated a close correlation between vaccination during early pregnancy and the incidence of the condition.[27] Following the recommendation that ewes not be vaccinated during pregnancy, the incidence of deformed lambs and stillbirths dropped dramatically. While attempts were not made to reproduce the syndrome by experimental means as has been done in the case of swine, nevertheless, available evidence leaves little doubt that the modified virus is the causative factor.

Many fundamental and certain applied aspects of bluetongue remain to be resolved. Such studies include a thorough analysis of the antigenic structure of the many strains of virus that have been isolated in the United States; the epizootiology of the disease; and the development of a more practicable method of confirming clinical diagnoses than the one in current usage.

The implications arising from the existence of several immunological types of the bluetongue virus—which is well illustrated by the situation in South Africa—should be pointed out. Recognition of this feature of the disease resulted only when a number of "breaks" which occurred in vaccinated flocks were investigated, and a strain of bluetongue virus recovered which was immunologically distinct from the vaccine virus. As new antigenic types of the virus emerged in this manner, it became necessary to incorporate a representative strain of each in the vaccine in order to provide adequate protection. At the present time, the vaccine used in South Africa is a multivalent product consisting of four immunologically distinct strains of virus.

There is no indication that more than one antigenic type of bluetongue virus exists in the United States, although immunological studies have been conducted on only several of the 20 or more strains that have been recovered during outbreaks in this country. Moreover, these tests were carried out entirely in sheep which, as will be pointed out later, possess distinct disadvantages for this type of work. However, realizing that the virus apparently mutates, or at least alters its antigenic characteristics, under natural conditions, a constant check must be maintained for the appearance of antigenically aberrant strains in order that an effective immunization program can be sustained.

Although certain fundamental information about the epizootiology of bluetongue has been established over the years by the South African investigators, these studies have been handicapped by the lack of certain fundamental needs. The resolution of the epizootiological picture appears to be contingent on the identification of the reservoir host or hosts of the virus. Indications are that sheep do not harbor the agent for a sufficient time to carry the infection over from one year to the next. It is possible, although doubtful, that the Culicoides species of gnat, which is known to transmit the virus, serves as a biological vector in that the virus is transmitted "in ovo" from one generation of gnat to the next.

The virus of bluetongue has been recovered from rodents in South Africa but not with sufficient consistency to implicate any particular species as a reservoir host. It has been demonstrated that cattle in South Africa harbor the virus during certain periods of the year without showing clinical signs of disease, and that sheep inoculated with the blood of such animals develop severe symptoms of bluetongue.[6] However, it is not known how long cattle carry the virus, or whether it might be harbored in them in a masked form during interepizootic periods.

Confirmation of the clinical diagnosis of bluetongue, in the United States especially, presents a problem because of the relatively recent appearance of the disease, with the consequent lack of opportunity to become acquainted with its clinical manifestations, and due to its mildness as compared with the clinical descriptions reported in the literature. Confirmatory tests can be carried out in sheep. However, in addition to being an extremely costly procedure, there is the disadvantage of being unable to determine beforehand the susceptibility of the sheep used except by inoculation. Attempts have been made in the past to develop serological procedures for bluetongue but with indifferent success.[18,32]

EXPERIMENTAL STUDIES

With the development of the technology of tissue culture, these procedures were investigated in renewed attempts to evolve

serological procedures that might be profitably applied to the various phases of bluetongue study mentioned. This work was initiated in South Africa,[7,26] and later taken up in the United States.

It was found that the bluetongue virus can be propagated in monolayer cultures of lamb kidney cells, and that cytopathogenic changes are produced. Since these changes could be neutralized by bluetongue-immune serum, a neutralization test was developed which, on the basis of limited testing, appeared to be quite type specific. It was found also that the tissue culture-propagated virus provides quite a satisfactory complement-fixing antigen, thereby making it possible to develop a complement-fixation test possessing a broad antigenic spectrum.

Indications are that serological procedures will eventually replace sheep for diagnostic procedures and for virus typing. In addition, they open up new areas of research, particularly in the field of epizootiology, in which little progress could be made in the past because of the lack of suitable technical procedures.

SHEEP PNEUMONIA

The pneumonias of sheep have long been recognized as one of the most important problems associated with sheep-raising throughout the world. In the past, many investigators have studied these conditions from the standpoint of etiological factors but without arriving at any agreement regarding the causes since many species of unrelated bacteria were isolated, while claims by some investigators indicated that a virus was the cause.

EXPERIMENTAL STUDIES

Within the past several years, strains of viruses which may or may not be identical have been isolated from pneumonic lungs of sheep in California,[3,15] Ohio,[3] and possibly in Michigan.[24] The California isolates are large elementary body-producing viruses that were recovered from lesions of three distinct pathological manifestations of pneumonia.

The first was from lungs that were congested and somewhat edematous. This type of pathological change in the lungs is associated with an acute pneumonia which occurs in sheep in California during the summer and fall months. The second series of isolations was made from sheep with typical cases of enzootic pneumonia, lobar in character and frequently accompanied by a fibrinous pleuritis. This infection is also quite common during the late summer and early fall months in California in lambs that are brought from the coastal ranges to irrigated pastures in the central valley for fattening. A viral agent was isolated also from animals with a quiescent type of pneumonia which is prevalent in lambs raised on the coastal ranges of California. This form of disease, characterized chiefly by bronchiolitis and atelectasis, is detected only at slaughter.[14]

Reports indicate that the isolation made in Ohio was from lungs affected with this type of pneumonia.[22] The propagation of an agent, in chicken embryos, from the pneumonic lungs of sheep that fitted the description of the lungs yielding the first California isolate was reported from Michigan. However, since the embryo tissues were not examined for the presence of inclusion bodies or other evidence of viral infection, it cannot be ascertained whether this agent was the same as the elementary body viruses isolated subsequently.

Studies of representative strains of the viral isolate recovered in California and Ohio showed them to be morphologically and tinctorially identical, and to possess similar pathogenic properties for chicken embryos and mice. Cross-protection tests conducted in guinea pigs indicated a considerable antigenic similarity, although more critical studies are needed in order to quantitate these relationships.

Intratracheal inoculation of sheep with the California strains of virus produced a febrile response accompanied by the development of mild pneumonia. The agent was recovered from the pneumonic lungs, and antibodies to the virus were demonstrated subsequently in the serum.[3,15] Cultures of Pasteurella species and pleuropneumonia-like organisms, which were also recovered from field cases of the enzootic type of pneumonia, failed to produce a reaction in sheep, either when inoculated alone or in conjunction with each other. When combined with the virus, the pneumonia produced was no more marked than when the virus only was given. Suspensions of lung from typical cases of field outbreaks of enzootic pneumonia, when inoculated intratracheally into sheep, produced the typical field syndrome, both with

regard to clinical manifestations and to the pathological changes.[3]

Present Status and Outlook

Preliminary studies suggest that several strains of a large elementary body-producing virus, which was isolated from animals with ovine pneumonia in California and Ohio, are identical. However, the type of pathological process from which the isolations were made varied considerably. An analysis of the pathological findings suggests that these differences may be more apparent than real in that they could conceivably represent various stages of the same process. Evidence of this may be summarized as follows.

The original isolations made in California were from the congested, edematous lungs of animals that died of an acute pneumonia. Three weeks following the inoculation of this virus into sheep, necropsy revealed the presence of small focal consolidations consisting essentially of a bronchiolitis and atelectasis, and virus was recovered. This pathological picture is quite characteristic of the so-called "silent" type of pneumonia which is observed at slaughter in lambs raised on the coastal ranges of California, and in lambs in Ohio.

The same type of lesions was observed in sheep inoculated with virus recovered from the enzootic type of pneumonia which is prevalent in California, and from the clinically quiescent form of the disease in both California and Ohio.

This evidence might suggest that these pulmonary foci observed at slaughter are chronic, residual lesions that resulted from a previous attack of pneumonia. It is possible that in young lambs, due to the presence of maternal antibodies and possibly to other factors, the infection is not as severe as in older animals. As has been suggested,[14] these lesions, under the stress experienced by the animals in transit, might become activated—since it has been shown that they contain virus—and the pneumonia produced be manifested as the early congestive stage of the disease or the subsequent lobar type, characteristic of the enzootic form, depending on the time when the lungs were examined.

The etiological role of the virus in the pathological processes from which it has been isolated is not yet clear although it is evidently of considerable significance. However, the fact that lung suspensions from animals with field cases of pneumonia produce an infection that simulates closely the naturally occurring disease would suggest that factors, either biological or environmental in nature, or both, are involved.

The possibility that the large elementary body-producing viruses from sheep lungs are identical with the virus of enzootic abortion of ewes (EAE) must be considered. With this thought in mind, the strain of sheep pneumonia virus isolated by the senior author in 1952 was inoculated parenterally into sheep during late pregnancy. A fever which lasted for several days was produced in each animal and 1 ewe gave birth to a dead lamb, although apparently at term. The other lambs were delivered at term and appeared normal. However, the fact that virus was recovered from the placental tissues of 2 of the 3 inoculated ewes was considered highly significant.[19]

Due to the intervention of bluetongue in California it was, unfortunately, not possible to pursue these studies further at the time. However, it has been found recently that the strain of sheep pneumonia virus studied earlier regularly produces abortion in guinea pigs on experimental inoculation, and the agent can be readily recovered from the placental tissues. The young are either born dead or die shortly after birth, and virus can be recovered from the internal organs without difficulty.[31]

In view of these findings, comparative studies of the isolates that have been recovered from sheep in the United States, and the virus of EAE, are strongly indicated. Such studies should include also the elementary body-producing virus that was isolated from the feces of normal sheep in Japan, in order to clarify the status of these viral agents in sheep.

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Actinobacillosis in Sheep

In recent years an increasing number of sheep, in South Australia, have developed actinobacillosis abscesses in the muzzle, under the jaw, and sometimes along the neck. Nodules may be 3 inches in diameter before they rupture and discharge typical greenish yellow pus. Affected sheep usually die, in eight to ten weeks, from starvation due to inability to eat.

Successful treatment consists of subcutaneous injections of 20 cc. of 10 per cent sodium iodide solution, repeated four or five times at weekly intervals.—*J. Agric. South Australia (Feb., 1959): 308.*

Polyarteritis in Sheep

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PERIARTERITIS NODOSA (polyarteritis,[6] panarteritis[21]) in animals has been reported in such species as the American deer (*Odocoileus virginianus*),[3] axis deer (*Axis axis*),[11,14] cattle,[5,9,22,26] dog,[2] horse,[13] mink,[8] nilgai antelope (*Boselaphus tragocamelus*),[23] and pig.[12,18,25] This reports the condition in 3 domestic sheep, an animal not previously reported to suffer from this disease.[17]

REVIEW OF LITERATURE

In 1906, an epizootic gastroenteric disease in the axis deer of the Württenberg district in Germany was described.[14] The histological alterations were chiefly periarteritis nodosa which occurred in the heart, kidney, liver, gallbladder, tongue, and skeletal muscle. The middle-sized arteries were commonly attacked.[11,14] The German literature on arteritides in animals was reviewed and the condition was reported in swine.[25] *Erysipelothrix rhusiopathiae* was believed responsible, in that vaccination or natural exposure produced an allergic state, and thus the arteritis.

In America, vascular lesions were observed in swine hypersensitized to a heat-killed culture of *Ery. rhusiopathiae*.[16] European writers[10,12,18,19,25] described the histological lesions as beginning in the intima and subendothelial portions of the artery; fibrinoid swelling or coagulative necrosis ensued and spread to the media and finally to the adventitia. Infiltration with round cells occurred, accompanied by granulocytic leukocytes. Although thrombi, intramural hemorrhages, and aneurysms were seen, these changes were not common.

Arteritides, associated with other disease entities, have been described in the veterinary literature. It was reported that infectious anemia of horses produced polyarteritis, particularly in the endocrine and reproductive organs.[20] Equine virus arteritis[13] and Aleutian mink disease[8] caused severe inflammatory arterial lesions.

TABLE 1—Clinical Observations on 4 Animals with Polyarteritis

Case No.	Sex	Age (mo.)	Appearance	Signs of illness
Sheep 1	Wether	6	Good flesh	Anorexia; colic; ill 4 days; died.
Sheep 2	Wether	6	Emaciated, loss of wool	Intense pruritus; anorexia; ill 60 days; temp. 102 F.; killed.
Sheep 3	Female	30	Good flesh	Stomatitis; pododermatitis; ill 7 days; temp. 103 F.; killed.
Heifer	Female	5	Good flesh	Nasal discharge; anorexia; ill 5 days; temp. 103.6 F.; died.

TABLE 2—Gross Pathological Observations on 4 Animals with Polyarteritis

Case No.	Abdominal cavity	Brain	Digestive tract	Eyes	Feet	Liver	Respiratory tract: Nares	Respiratory tract: Lung
Sheep 1	Ascites	.....	.....	.....	.....	.....	.....	Pneumonia
Sheep 2	.....	.....	.....	.....	.....	Mottled	.....	.....
Sheep 3	.....	.....	Ulcerative stomatitis	.....	Pododermatitis	.....	Rhinitis	.....
Heifer	.....	Subdural hemorrhage	.....	Cloudy	.....	.....	Rhinitis	Pneumonia

MATERIALS AND METHODS

Three sheep and a heifer comprised the material for this report. The sheep came from three Connecticut farm flocks of approximately 50 animals each. The flocks were separated by distances of at least 45 miles. The heifer came from a dairy farm

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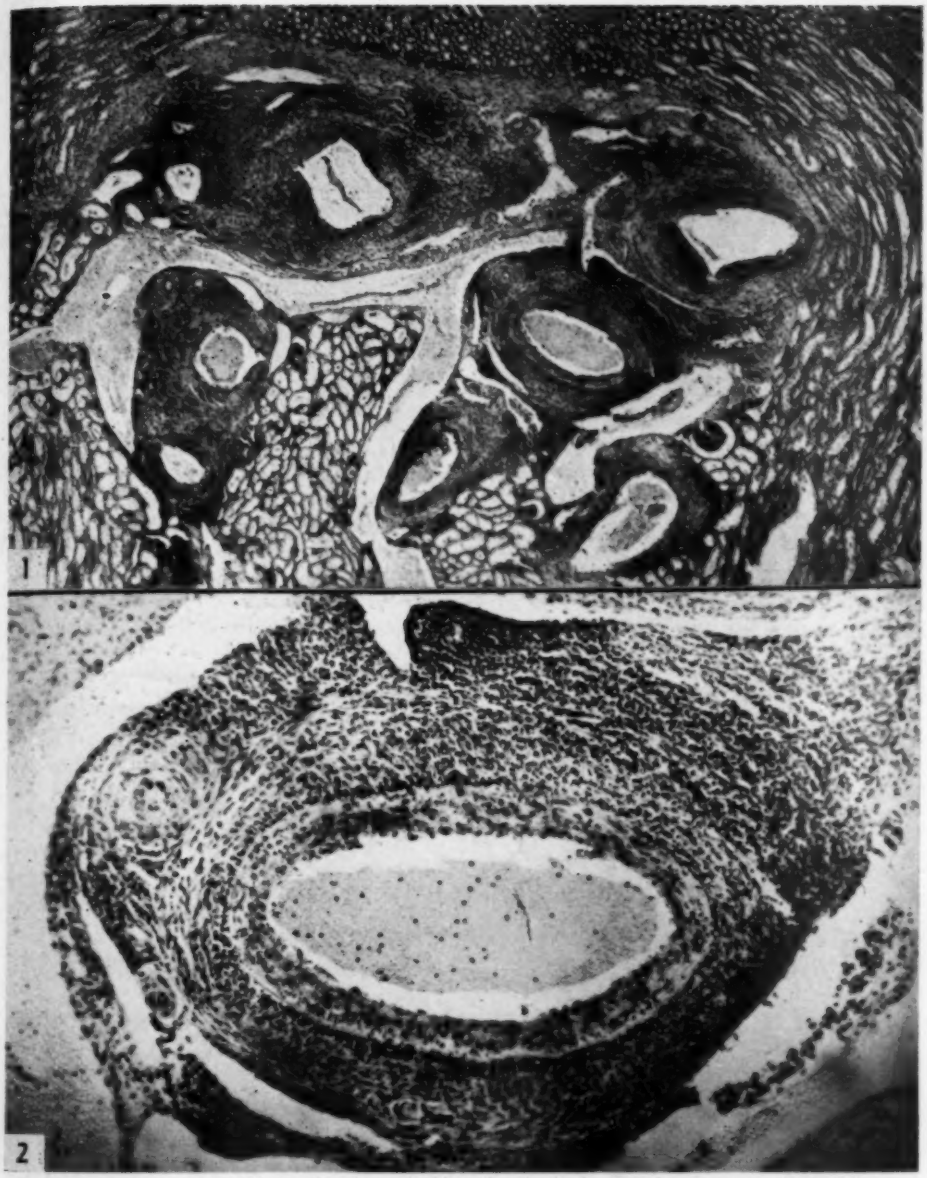

Fig. 1—Section of the kidney of a 6-month-old wether lamb showing the arcuate and interlobar arteries markedly thickened and compressing the medullary parenchyma. H & E stain; x 34.

Fig. 2—Cross section of an artery seen in figure 1, showing marked infiltration of adventitia by round cells. The media is distinct and slightly infiltrated while the endothelium is unaffected. H & E stain; x 105.

TABLE 3—Microscopic Observations on 4 Animals with Polyarteritis

Case No.	Brain	Intestines	Kidney	Liver	Lung	Urinary bladder
Sheep 1	.....	.....	+	.....	+	+
Sheep 2	.....	.....	+	.....	.....	+
Sheep 3	.....	.....	+	.....	.....	+
Heifer	Encephalitis	+	+	+	.....	+

of 200 animals, which were maintained near one of the sheep farms (sheep 1).

These animals were subjected to routine necropsy procedures: (1) Portions of brain and of thoracic and abdominal viscera were fixed in 10 per cent formol-saline solution, embedded in paraffin, sectioned, and stained by hematoxylin-eosin. Special staining techniques such as Levaditi's silver technique, Masson's trichrome, and Gridley's fungus stain were employed for selected tissues; (2) bacteriological cultures were made on blood agar plates of cardiac blood, liver, and spleen. Mycological examination by culture of nasal turbinate material on Sabouraud's agar was done on 1 sheep (sheep 3); (3) toxicological analyses were made of rumen contents and liver;* (4) serological tests for leptospirosis were done by the agglutination-lysis test. In addition, limited hematological studies were done on the two live specimens (sheep 2, heifer).

*Made by Dr. Harry Fisher, chief chemist, Connecticut Agricultural Experiment Station, New Haven, Conn.

RESULTS

Clinical Signs.—There were no common signs of illness among the affected animals (table 1). Sheep 1, a 6-month-old Southdown wether, died in four days after a stormy course of colicky signs accompanied by anorexia and a slight rise in body temperature; clinical diagnosis was renal lithiasis. Sheep 2, a 6-month-old Suffolk wether, was slaughtered after a 60-day illness characterized by pruritus, anorexia, emaciation, and a slight febrile reaction; clinical diagnosis was scrapie. Sheep 3, a 30-month-old grade ewe, was killed after a seven-day illness with a slight febrile reaction; clinical diagnosis was nonspecific rhinitis.

The heifer, a 5-month-old Guernsey, died after a five-day illness accompanied by anorexia, nasal discharge, and slight febrile reaction. Since she had been dehorned a few days previously, the clinical diagnosis was septic sinusitis. All animals represented sporadic cases, other flock members were in good health.

Necropsy Findings.—Gross pathological changes lacked similarity. Sheep 1 had an ulcerative urocystitis (table 2). Sheep 2 had a bilateral enlargement of the ureter, chiefly due to edema. In the heifer and sheep 3, there was a purulent rhinitis. In addition, the heifer had a large subdural

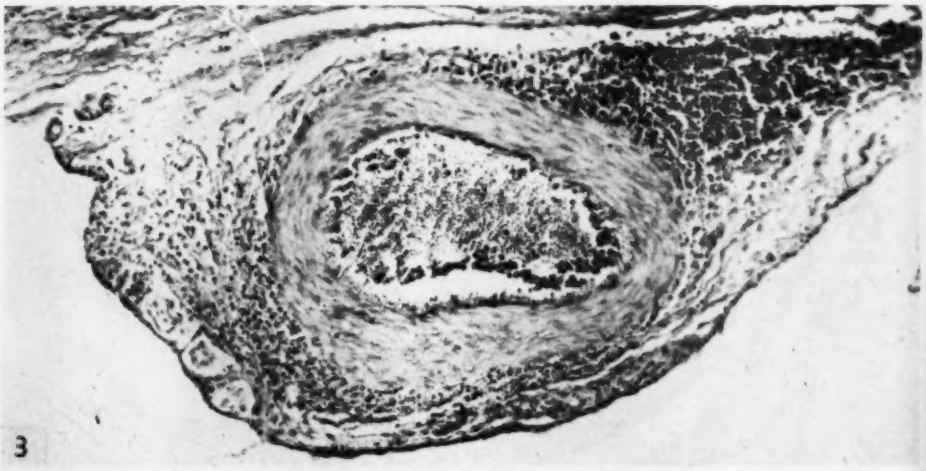

Fig. 3—Artery from the sella turcica of the same lamb (see fig. 1). Round cells infiltrate the adventitia; the media and the endothelium are normal but the leukocytes in the lumen show the "pavementing phenomenon." H & E stain; x 105.

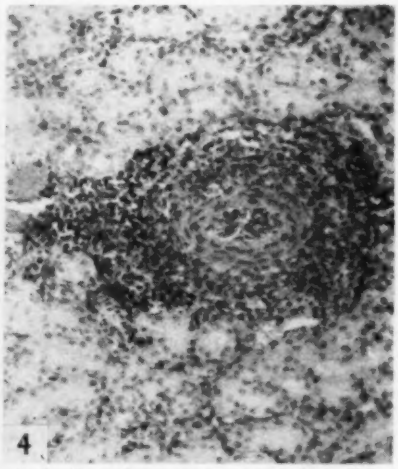

Fig. 4—Section of an arcuate artery from the renal cortex of a 5-month-old heifer. The markedly infiltrated adventitia surrounds an intact media but the lumen is occluded by hyperplastic endothelium. H & E stain; x 105.

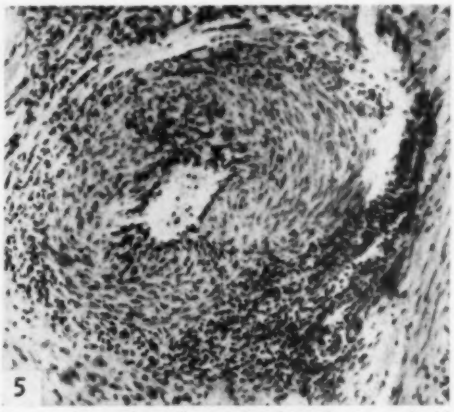

Fig. 5—Artery from the renal pelvis of a 6-month-old ram lamb. Sectoral penetration of the media by adventitial infiltrates is seen at the 12 and 5 o'clock positions. H & E stain; x 125.

hemorrhage over the cerebellum. Nodules along the arteries, such as are often reported in human beings[6,21] with periarteritis nodosa, were not seen.

Histological Findings.—The outstanding lesion was arteritis affecting arteries up to 0.5 mm. in the greatest luminal diameter but most commonly found in the smaller arteries, particularly those of 0.3 mm. in diameter. The alteration began as an invasion of the adventitia by lymphocytes and a few histiocytes (fig. 3). The next step was a sectoral penetration of the media by the infiltrating cells (fig. 5, 7). At this stage, the leukocytes of the blood stream seemed to migrate to the plasmacytic zone to form the "pavementing phenomenon"[4] (fig. 3). The round cells, which penetrated the media, had proliferated and spread about in the subendothelial tissue (fig. 6). This process resulted in endothelial

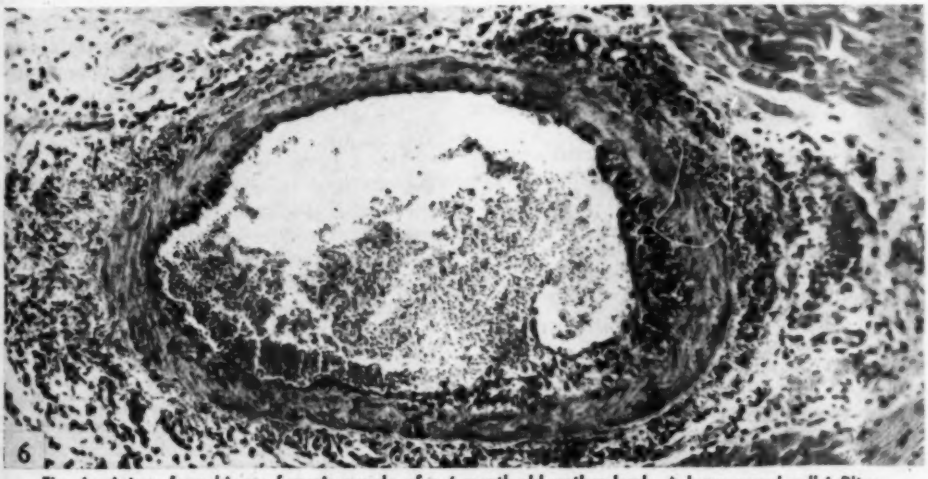

Fig. 6—Artery from biceps femoris muscle of a 6-month-old wether lamb. A loose round cell infiltration is seen in the adventitia while the lower right portion shows hyperplastic endothelium projecting into the lumen. H & E stain; x 105.

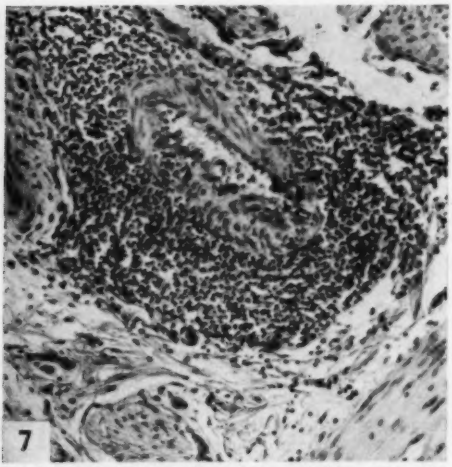

Fig. 7—Artery from the urinary bladder of a 30-month-old ewe. A thick adventitial cuff of round cells is beginning to penetrate the media. H & E stain; x 105.

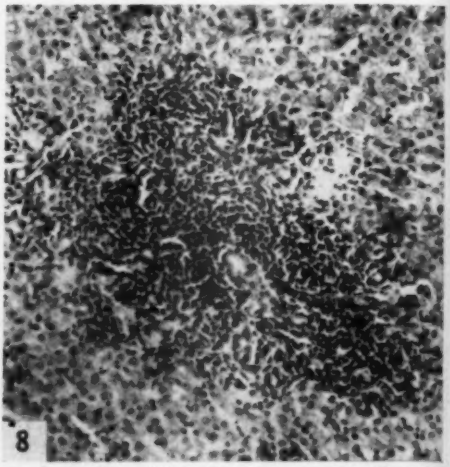

Fig. 8—Section of liver from the 6-month-old wether lamb (see fig. 6), showing a portal triad, infiltrated by round cells. H & E stain; x 105.

hyperplasia, but occlusion of the lumen was rare (fig. 4). The majority of the affected arteries presented this pathological picture, *i.e.*, all layers were involved. Infarction, owing to thrombosis, was uncommon. The veins were never involved.

The arteries of the urinary tract, from kidneys to bladder, were invariably attacked (table 3). In the ureter and bladder, the arteries in the muscular wall were involved while, in the kidney, the arcuate and interlobar arteries (fig. 1, 2) were altered. In sheep 2 from which many samples were sectioned, the arteries of the skeletal muscles (fig. 6) were also intensely altered. Of further interest was the relatively large number of Sarcosporidia seen in these muscles.

Aside from the polyarteritis, other lesions were uncommon. In sheep 2, a periportal infiltration of round cells (fig. 8) was seen in the liver and, in the heifer, there was a mild, nonpurulent, disseminated encephalitis. In this sheep, which was clinically considered to have scrapie, no histological lesions were found in the central nervous system.

Bacteriological and Mycological Findings.—No pathogenic bacteria were isolated from any of the animals. From the turbinates of sheep 3, various fungi such as *Cladosporium wernechi*, Hormodendrum sp., and *Mycelia sterilia* were isolated but not considered significant.

Hematological Findings.—Nothing of diagnositic value was found by the limited examinations applied.

Toxicological Findings.—In 1 animal (sheep 2), lead was found in the liver (20 p.p.m.) and in the rumen content (25 p.p.m.). No explanation as to the source of the toxic metal was obtained.

DISCUSSION

The arterial lesion reported here was classified as polyarteritis on the grounds that the entire arterial wall eventually became involved. The term, periarteritis nodosa, was not considered appropriate[21] because of its inherent semantic implication of outer arterial wall involvement, and because no nodal formation was seen.

The pathogeny of periarteritis nodosa in man[6,21] and in animals[18,19] indicates that the initial lesion occurs in the media as contrasted to the periadventitial tissue in the cases considered in this report. Another point of difference was the absence of granular leukocytes in the ovine specimens.

The etiological factor in these cases of polyarteritis was not determined. In man and in other animals, the arteritides of this type are generally conceded to result from an allergic state. Little concrete evidence is offered, particularly in animals, except that the available reports[15,16,25] indicated a hypersensitivity arising from *Ery. rhusiopathiae* infection or vaccina-

tion. Another theory, that a filterable virus causes this rare condition, has some support from the occurrence of arteritides in equine virus arteritis[13] and in infectious equine anemia.[20] However, no cause could be determined in the cases presented.

The fact that lead was found in abnormally high amounts in 1 case (sheep 2) was probably not significant as far as arteritis was concerned; arterial lesions were not seen in sheep in which lead poisoning had been produced experimentally.[1]

The disseminated nonpurulent encephalitis seen in the calf was suggestive of malignant head catarrh.[24] Yet, arterial lesions were not reported in this disease,[24] which tends to eliminate malignant head catarrh as a cause. Furthermore, the disease in sheep is benign and of no systemic consequence.[24]

SUMMARY

Polyarteritis occurred in 3 sheep and a dairy heifer. The sheep were from widely separated farms but the heifer was from a farm neighboring that of one of the sheep. No cause for the disease was determined. The illness did not appear to be contagious.

Affected animals manifested variable signs of illness. One sheep appeared to have renal lithiasis, another stomatitis, and the third scrapie. The clinical diagnosis for the heifer was malignant head catarrh.

The lesions occurred chiefly in the urinary tract, particularly the interlobar and arcuate arteries of the kidney; other areas such as skeletal muscle were involved to a lesser extent. Microscopically, the first discernible alteration was an accumulation of round cells in the adventitia. This stage was followed by sectoral penetration of the media resulting in focal endothelial hyperplasia. The media then became widely involved. No granulocytic leukocytes were present. Arteries of about 0.2 mm. luminal diameter were commonly affected.

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Vibriosis as a Factor in the Reproduction of Antelope (*Antilocapra Americana*)

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GAME-MANAGEMENT personnel of the Wyoming Game and Fish Commission became conscious of a lowered fawn:doe ratio in antelope in the Delaney Rim area of south-central Wyoming in 1954. At that time, they counted 48 fawns per 100 does in the area. Normally, between 80 and 100 fawns per 100 does are expected to survive. In 1956, the ratio in the same area was only 17 fawns per 100 does. This reduction caused concern, and a detailed study was started in late 1956 to determine causes for this low fawn:doe ratio.

PRELIMINARY STUDIES

Preliminary studies were made to determine the conception rate and the state of nutrition of antelope in the problem area and in a control area where the reproduction ratio was normal.

In the female antelope collected from the problem area during the 1956 to 1957 gestation period, the fetus:doe ratio was 1.79:1.0. However, aerial counts made in July, 1957, one month after fawning season, showed survival of only 15 fawns per 100 does. Female antelope collected in the control area showed a fetus:doe ratio of 1.65:1.0 during the same gestation period.[5] Aerial counts in the control area in July of 1957 showed survival of 84 fawns per 100 does. These data showed a high conception ratio in both herds but a low fawn survival rate in the problem herd as compared to the control herd.

A field observer was placed in the problem area during the time of the expected fawn drop. No dead fawns or aborted fetuses were found during a two-week period. The skeletons of 15 fawns, which had died the year before, were found. Many of the skeletons were intact, indicating that predation was not a serious factor.

Body weights of the antelope from the problem area were generally as high or higher than those from the control area.[5] Body-fat deposits were much larger on the animals collected from the problem area as compared with animals from the control area. This indicated that nutrition was probably not a critical factor in fawn survival.[5]

Since the conception and nutrition factors appeared to be normal, the possibility of a genital disease was indicated. The Veterinary Science and Bacteriology Department of the University of Wyoming was carrying on research on ovine vibriosis at this time; therefore, specimens collected from the antelope during the last three months of the gestation period were submitted to this department to determine whether *Vibrio fetus* was present. Sheep ranged the same area as these antelope.

EXPERIMENTAL PROCEDURE AND RESULTS

First Year.—During the 1956 to 1957 gestation period, 14 female antelope were collected in the low fawn survival area and 14 from the high fawn production (control) area. Bacteriological examinations were made on 12 animals from the former herd and 5 from the control herd.

Vibrio-like organisms were found in 3 of the 12 animals collected in the low fawn survival herd—from the blood of 1 female in March, from the amniotic fluid of 1 in April, and from the stomach contents of 1 twin fetus in May. No suitable domestic animals were available to continue animal inoculations with these positive cultures. No Vibrio organisms were isolated from 5 animals from the control herd. The low survival ratio in conjunction with the presence of Vibrio organisms in the 3 animals indicated that vibriosis should be given top consideration for the next phase of the study.

Second Year.—The 1958 collections were arranged to cover only the last three months of the gestation period of the female antelope. Two control areas were also studied to determine the effect of as-

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sociation with domestic sheep as a possible factor in vibriosis in antelope. A control area was established where domestic sheep were running with the antelope and where fawn survival was high (control area 1). A second control area was set up where no sheep had been in contact with the antelope for a number of years, yet where the antelope showed high fawn productivity (control area 2). The problem area remained the same as in the previous year, with domestic sheep utilizing the same range as the antelope.

Fourteen mature female antelope were collected from each of the three areas during the last three months of gestation (antelope fawn in late May or early June after a seven-month gestation period). Total antelope counts were made in the areas before the collections to establish the population for percentage estimates. Cultures for the isolation of *V. fetus* were made from each of the 42 animals collected.

Antelope were collected in the field with a rifle. As soon as possible after the animal was killed, the vagina was tied to eliminate the possibility of contamination from the exterior and the uterus was removed intact. The method of collecting the antelope was responsible for an occasional damaged or ruptured uterus. In these cases, the fetuses were placed in a polyethylene bag for return to the laboratory. Efforts were made to refrigerate the uteri and fetuses immediately after collection and to take them to the laboratory as soon as possible.

The problem area and control area 1 were each approximately 150 miles from the laboratory, and as many as three days were required to make all collections in these two areas. Control area 2 was approximately 35 miles from the laboratory; therefore, the collection and storage of specimens from this area were more satisfactory.

Blood samples taken as soon as possible after death were innoculated into culture medium under vacuum in the field, then taken to the laboratory and incubated with the fetal specimens. Specimens taken in the laboratory included samples of the stomach contents from the fetuses, swabs of the uteri of the dams, and fetal fluid culture. Available time and equipment did not allow a complete study of the entire flora of the female organs; only the organism *V. fetus* was sought. The cultural techniques of Plastridge *et al.* were used for isolation of *V. fetus*.[2] The livers and stomachs of all fetuses were frozen and stored until the cultures were complete.

After thawing and macerating the frozen stomachs and livers of the fetuses which were thought to contain infective material, pregnant domestic ewes were inoculated orally with a mixture of these specimens by means of a drenching gun. Approximately 100 cc. of material was given to each ewe. The aborted fetuses from these ewes were cultured as described previously. Cultures were taken within 24 hours after abortion from all but 1 of these fetuses, which was already in a state of decomposition.

Two of the 14 mature female antelope collected in the problem area during 1958 yielded Vibrio organisms—from the amniotic fluid of 1 in April and from the stomach contents of a twin fetus from the other in May. The 28 mature female antelope collected in the two control areas were negative for Vibrio organisms.

Abortion occurred in all of 4 susceptible ewes following inoculation with material collected from the 2 positive antelope during 1958. Nine control ewes, held under similar conditions, lambed normally. Vibrio organisms were isolated from 2 of the aborted lambs. Cultures of a third aborted lamb were negative. No cultures were prepared from the fourth aborted lamb which was in a state of decomposition when found.

DISCUSSION

Aerial antelope counts made of the study areas each month prior to collection trips indicated that the samples taken in 1958 represented 6.6 per cent of the population in the problem area, 4.5 per cent in control area 1, and 14.3 per cent in control area 2.

The diagnosis of a *V. fetus* infection is based on the predominance of the Vibrio organism in the aborted fetus.[1,2,4] The organisms isolated from the antelope during this study were classified as *V. fetus* according to morphology and staining characteristics. The fact that abortions occurred in susceptible domestic ewes following oral inoculation with material from fetal organs was an aid in determining the identity of the isolated organisms.[3]

Cultures obtained from 2 of the female antelope collected in the problem area during the second year of study (1958) ful-

filled the morphological and biological activity of *V. fetus*.

SUMMARY

A low conception rate was not a factor in the low fawn production in a herd of antelope. Vibriosis was incriminated as a possible cause of the low production.

Organisms isolated from female antelope from this herd fulfilled all available laboratory and clinical diagnostic tests for *Vibrio fetus*.

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Induced Transmissible Gastroenteritis in Newborn Pigs

In a study of the effect of transmissible gastroenteritis (TGE) on suckling newborn Hampshire pigs, no significant difference was found in the organ and total body weights between infected and noninfected baby pigs up to the fifty-fourth hour following infection.

Total body and organ weights in general were lower in the infected pigs from the fifty-fourth to the ninetieth hour after infection, probably because of vomiting, diarrhea, and decreased feed consumption. The weight of stomach tissue plus intestinal tract and its contents was higher for infected pigs than for noninfected pigs, when adjusted to equal body weight, and is believed to be due to submucosal and mucosal edema.

The total blood protein and hemoglobin of infected pigs were higher than those of the noninfected pigs, which probably indicated dehydration. Blood glucose varied considerably more in infected pigs than in the noninfected pigs, but there was no definite trend toward a sustained hypoglycemia in spite of the fact that liver glycogen decreased to practically zero. The sustained blood glucose of infected pigs was believed to be largely due to endogenous protein breakdown, which was correlated with higher blood urea and nonprotein nitrogen.

Impaired kidney function may also account for the sustained and elevated blood urea and nonprotein nitrogen of infected pigs.—[*John W. Yusken, Pauline Ho, Elwood F. Reber, and Horace W. Norton: The Effects of Infecting Newborn Pigs with Transmissible Gastroenteritis Virus. Am. J. Vet. Res., 20, (May, 1959):585-588.*]

Piperazine Kills Liver Flukes *in Vitro* but Not *in Vivo*

The activity of *Fasciola hepatica* was temporarily increased when placed in a solution of 250 mg. of piperazine in 100 ml. of Ringer's solution. Their activity gradually decreased and they were dead in 24 hours.

• • •

When 60 cattle with fascioliasis were treated parenterally with a mixture of 11 per cent piperazine, 15 per cent sodium glycocholate, and 74 per cent water, there was no decrease in the number of *F. hepatica* ova in their feces.—*Vet. Bull. (Feb., 1959): Items 439 and 440.*

Age and Teeth of Charolais Cattle

New observations on development of the teeth of registered Charolais cattle in France, involving 125 animals over a period of four years, show great individual variations in the age of eruption. As in other breeds there was a negligible variation in the pincers (medial pair) but greater variation in the intermediate and corner (lateral incisor) teeth.

Contrary to reports, the pincers did not appear before cattle were 2 years old and some were over 25 months (most between 24 and 25 mo.). These teeth usually reached the dental table between 24 and 28 months.

The first intermediate pair erupted between 29 and 36 months (av. 33 mo.) and were in wear three months later.

The second intermediates erupted at 34 to 48 months, with most of them at 42 to 46 months (av. 43 mo.), and were in wear three months later.

The corner pair erupted at 43 to 59 months with the most common age being 48 to 52 months and wear commencing at 56 to 59 months.—*R. Barone and J. M. Piette in Rev. méd. vét. (Feb., 1959): 156.*

An Evaluation of Piperazine Citrate for Preventing Prenatal Infections with the Common Dog Ascarid (*Toxocara Canis*)

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TOXOCARA CANIS, *Toxocara cati*, and *Toxascaris leonina* comprise the so-called "roundworms" of dogs in the United States. *Toxocara canis* constitutes most of the canine ascarid infections in this country, whereas *T. cati* is usually restricted to cats and *T. leonina* is a relatively exotic species found primarily in zoo animals.[3,13,17] *Toxocara canis* is the only helminth of this group which presents an economic and public health problem.[1,17,18]

Contrary to popular opinion, it is probable that *Toxocara canis* is the most serious parasite of dogs. Although the disease entity caused by these helminths does not show the striking clinical manifestations which have been associated with some other canine parasitic infections, the insidious nature of the nematodes may soon justify some changes in previous concepts pertaining to the common roundworms. Recent investigations indicate that the greatest damage inflicted by these pathogens is in pups before the mature parasites appear in the alimentary canal.[17]

As an animal disease of public health significance, canine ascariasis has been considered a potential zoonosis for man.[4] Additional work has confirmed that *T. canis* is of considerable importance as an etiological agent of visceral larva migrans in man.[5,10,11]

This investigation has been a preliminary quest for arriving at a practical and efficient means of producing pups relatively free of ascarids at birth.[19] High dosages of piperazine hydrochloride given orally to mice before and after infection with *Ascaris lumbricoides* prevented the larvae from invading the blood stream and lungs.[2] Because of these findings and the pronounced filaricidal effect of certain piperazine compounds, one of the salts was selected as a logical drug for further experimentation.[6-8,12]

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This study was supplemented by an annual grant which is made available through the Polk Miller Products Corp., Richmond, Va.

MATERIALS AND METHODS

Experimental Animals.—Twelve ascarid-free bitches and 2 studs were selected to form a colony which was considered representative of an average dog population. Two bitches were registered and 10 were mongrels. One sire was a crossbred pointer-setter. Ten of the females were bred to the colony stud, and 2 to an additional unregistered setter bird dog.

These dogs were kept in newly constructed concrete pens (6 ft. by 18 ft.) which had not previously been occupied by any animals. The kennels were cleaned daily. The dogs were fed a high-grade commercial concentrate with canned meat and milk supplements, and were kept in good physical condition.

Inoculation.—Toxocara canis ova were obtained by a special procedure.[9] The eggs were collected directly from the excised uteri of the nematodes, and cultures were kept in 0.5 per cent formalin and incubated for a minimum of 21 days at temperatures between 70 to 90 F. Cultures between 21 to 100 days of age were used for infection, and the percentage viability of each larval cultures was estimated by microscopic examination of live embryos in the eggs and through the oral inoculation of these into rabbits.

For the latter procedure, rabbits infected with 1,000 ova were killed 30 days postinoculation, and the liver, lungs, and brain of each animal were processed by means of a Baermann apparatus.[16] Live larvae were found in the tissues studied from each infected animal.

The ova were suspended in an 0.85 per cent physiological saline solution and administered orally in gelatin capsules. On the tenth day after initial copulation, each bitch was given 5,000 embryonated *T. canis* ova. This dosage and interval of infection were continued throughout gestation.

Medication.—At the time of breeding, the 12 bitches were allotted at random to four groups of 3 animals each. Those in three groups were placed on different levels of piperazine citrate, which was given at daily and ten-day intervals during gestation. For oral administration, the drug was incorporated in the ration. One group of animals was retained as controls. The treatment regime throughout gestation was as follows: group 1—200 mg. of piperazine citrate per kilogram of body weight per day; group 2—100 mg. per kilogram per day; group 3—200 mg. per kilogram at ten-day intervals; group 4—drug not given (controls).

Observations.—After the first day of breeding, with subsequent inoculation, feces from each bitch were examined at weekly periods until the pups

were weaned. Whenever possible, several fecal specimens were examined from each litter of pups. A modification of Stoll's Method was used for this purpose.[14,18] The pups were killed when 45 days old and their alimentary tracts were searched for helminths.

Worm Collection.—During the life span of all pups, the ascarids they passed were collected daily and counted, and when killed, the helminths were procured from their alimentary canals by decantation. Precautions were taken not to overlook immature worms. They were examined under magnification, identified, and counted. The number of *T. canis* passed by pups in each litter was estimated and the exact number in each animal was determined at necropsy.

TABLE 1—The Effectiveness of Piperazine Citrate on the Course of Toxocara Canis Prenatal Infections in Dogs

Group No.	Dosage (mg./kg. body wt.) and treatment interval	Bitch No.	Month of birth	Pups born in litter	Pups necropsied per litter	No. T. canis in feces	No. T. canis at necropsy	Total T. canis per litter	Means T. canis per litter	Extremes T. canis per pup	Total pups necropsied per group	Total T. canis per group	Means T. canis per pup in group	Extremes T. canis in pups in group
1	200 mg./-kg./day during gestation	1	Oct.	5	5	114	589	703	140.6	103-147				
		2	Dec.	11	2*	0	450	450	225.0	195-255				
		3	Feb.	8	6**	0	254	254	42.5	30-63	13	1,407	108.2	30-255
2	100 mg./-kg./day during gestation	4	May	6	5**	232	771	1,003	200.6	123-194				
		5	Oct.	3	3	0	38	38	12.7	7-16				
		6	Oct.	9	8**	0	190	190	23.8	11-31	16	1,210	75.6	7-194
3	200 mg./-kg./at 10-day intervals during gestation	7	Aug.	9	3**	0	72	72	24.0	7-36				
		8	Oct.	6	6	51	362	413	68.8	20-107				
		9	Oct.	5	5	0	74	74	14.8	7-17	14	659	47.0	7-107
4	Controls infected but not treated	10	Aug.	5	5	8	29	37	7.4	4-10				
		11	Aug.	7	7	0	346	346	49.4	29-64				
		12	Sept.	9	9	0	73	73	8.1	3-17	21	456	21.7	3-64

*The cause of pup mortality in this litter was thought to be parasitism (T. canis); all died within three days after birth; the extensive hepatic and pulmonary lesions were indicative of verminotic hepatitis and pneumonia.

**Deaths of pups in these litters appeared to be unassociated with parasitism.

RESULTS AND DISCUSSION

Adult ascarids did not develop in any of the 12 bitches during this study; however, at approximately 21 days old, appreciable numbers of *T. canis* ova had appeared in the feces of pups from each litter. Seasonal fluctuations[4] or breed differences in susceptibility to ascarids were not determined. There did seem to be marked litter variations in susceptibility for *T. canis* infections; however, the findings were consistent and wide extremes of infection among pups in a litter did not occur.

As previously indicated for swine,[9] the piperazine salt used did not show any effect in inhibiting the migratory phase of *T. canis* (table 1). It even seemed that when this drug was fed at varying levels to pregnant bitches, the ascarid infections in the offspring were proportionately increased.

Although the breeding bitches were free of adult ascarids, all pups were born with some *T. canis*. The susceptibility of the offspring seemed to be predetermined by the dam, and animals of a single litter were prenatally infected with slight individual variations in the number of these parasites. When the pups were 3 weeks old, many of the nematodes had reached the small intestine and *T. canis* ova were being passed in the feces.

The earliest age at which an effective anthelmintic can be conveniently administered with safety to dogs is between 4 and 5 weeks. This means that a one- to two-week interval exists during which most pups pass large numbers of viable *T. canis* ova before vermifugal procedures are practical. In view of the recent public health implications of these helminths and the present limitations in therapy, both the veterinarian and physician should recognize their potentialities. Undue concern often has been expressed for canine parasites which are of much less consequence, while the common ascarids were relatively ignored.

This study was unsuccessful in solving the current problem involving children and their canine pets.

SUMMARY

Piperazine citrate administered daily or at ten-day intervals during the gestation period of 9 bitches failed to reduce intrauterine infections with *Toxocara canis* in their pups.

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Radiographic Diagnosis of Mesenteric Abscesses in the Horse

Rectal examination, although of some value, does not yield satisfactory results in the diagnosis of mesenteric abscesses in the horse, since usually only the caudal part can be palpated and, at times, the whole abscess may lie out of reach of the exploring hand.

Radiographic examination and artificial pneumoperitoneum provide information about the size, shape, position, and relation to other organs of these pathological formations (caused most often by Streptococcus infection) whatever their topographic location.

The size of mesenteric abscesses varies; their shape is semispherical, semielliptical, or conical. Their shadow is not homogeneous because the liver, stomach, and right dorsal loop of the large colon partially press against each other.

The animals are prepared for roentgenological examination by fasting two to three days and by application of a mild laxative. It is advisable to calm the horses before the diagnostic procedure by administering some barbiturate. The insufflation is applied in the left flank; small horses are insufflated with 10, medium-sized ones with 15, and large animals with 20 liters of air. After the examination, most of the air is released from the abdominal cavity. The animals exhibit no unfavorable aftereffects. —[*B. Zeskov, Z. Brudnjak, and V. Sertic: Radiographic Diagnosis of Mesenteric Abscesses in the Horse. Am. J. Vet. Res., 20, (May, 1959): 448-451.*]

Body Temperatures of Racing Greyhounds

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MANY AUTHORITIES[1-6] place the normal body temperature of the dog somewhere between 100.0 and 102.0 F. There is general agreement that exercise causes a rise in temperature. Additional factors frequently given as influencing temperature are age, sex, reproductive cycles, time of day, eating, digestion, drinking water, environmental temperature, excitement, and exercise.

One writer[4] mentions that excitement in dogs may cause as much as 2 degrees increase in temperature, which always returns to normal after the dogs are back in the kennel one or two hours, unless some pathological cause is present.

However, another[5] states, "Age, race, sex, temperament, and eating have but little influence on body temperature."

METHODS AND MATERIALS

Body temperatures of greyhounds under a variety of conditions were recorded at a track* at Denver, Colo., during the summers of 1955 and 1956. An electric thermometer** was used to obtain all temperatures. This thermometer registers a maximum temperature within ten seconds after the probe is inserted into the rectum of the dog.

The routine of a dog track operation gives dogs a variety of experiences which might be expected to affect body temperature. The procedure for obtaining temperatures was as follows: (1) Temperatures of the dogs were compared before racing and after racing a distance of 540 yards; (2) temperatures at weigh-in were compared with temperatures at weigh-out, which is from two to three hours later; (3) body temperatures of male dogs were compared with those of female dogs under similar conditions; (4) body temperatures taken at kennels before the dogs were brought to the track were compared with weigh-in temperatures.

All dogs involved were registered greyhounds; therefore, these results were based on individuals within a pure breed. The ages of racing dogs usually range from 1½ to 4 years. They are kept in private kennels away from the track. At approximately 4:00 p.m., they are turned out of their individual cages into an exercise yard. Body temperatures were taken as soon as the dogs were removed from their cages, but before they were turned into the exercise yard.

After a short period in the exercise yard, the dogs not running that night are returned to their cages and fed. Those racing are weighed and may or may not be fed a small amount of food, depending on how near the dog is to his pre-set weight. At weigh-in, any dog that varies more than 1½ lb. from his pre-set weight is "scratched," and is not permitted to race.

The dogs scheduled to race that night are then loaded into trucks or trailers and taken to the track for weigh-in. They are then placed in individual cages in the lock-out kennel at the paddock.

The lock-out kennel, sometimes referred to as the "Ginny Pit," is the area where the dogs for the night's racing are confined. Confinement begins at the first weighing (the weigh-in) and prevails until the dogs are removed from their cages by licensed track personnel.

Weigh-in, performed from 5:00 to 5:30 p.m., refers to the initial weighing of a dog at the track. Weigh-out, done shortly after a dog is removed from his cage in the lock-out kennel prior to entering his respective race, is the second time a dog is weighed. The weigh-out time is different for each race but must be at least two hours after weigh-in.

Each dog remains in his cage until he is removed by a groom, weighed a second time (weigh-out), and paraded to the track. Most of the weigh-out temperatures were recorded for dogs in the first and second races (between 7:30 and 8:30 p.m.). Weigh-out temperatures were taken after

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*The Mile High Kennel Club, Denver, Colo.; **the Swiftem Thermometer, no longer being manufactured.

the dogs were weighed, but before they left the paddock for the track.

On scheduled evenings, schooling races are held during the interval between weigh-in and the start of official racing. These schooling races are similar to official races except there is no purse for the winners, no betting on the races, and the dogs go to the track shortly after being weighed without being placed in lock-out kennels. Consequently, pre-race temperatures of schooling dogs were taken shortly after the dogs were weighed. The purpose of schooling races is to qualify dogs for official races and to obtain a past performance record for official programs in which the dogs may race. The schooling races are run over a distance of 540 yards.

The dogs are placed in individual stalls in the starting box. The doors on the front of the box open automatically when the lure or mechanical rabbit reaches a specified point in front of the box. Then the dogs follow the lure around the track until the lure disappears in the escape beyond the finish line.

Post-race body temperatures were taken after the dogs were caught at the escape and then led back along the stretch to the paddock, a time interval of about 30 to 50 seconds after the finish of the race. The actual running time usually ranged from 30 to 34 seconds.

Of the figures used in the comparison of weigh-in and weigh-out temperatures, the former were also used to compare the body temperatures of males and females.

Most temperatures were taken of schooling dogs or dogs in the first two official races. Many of these dogs raced from one to three times per week throughout the season. No attempt was made to select or avoid the same dog for subsequent temperatures.

DISCUSSION AND RESULTS

The pre-race body temperatures, compared with post-race temperatures (table 1), showed a significant difference. The mean difference was a rise of 2.945 degrees after running 540 yards. This is in agreement with the consensus that exercise does cause a rise in temperature.

TABLE 1—Comparison of Body Temperatures of Racing Greyhounds Under Varied Circumstances

Body temperature recorded	No. of dogs	Mean body temperature	Standard deviation
Pre-race	45	102.750	± .54
Post-race	45	105.695	± .85
		2.945 diff.	T = 3.05 P(t>2.5)<.01
Taken at kennel	69	100.217	± .434
Weigh-in	271	102.064	± .568
		1.847 diff.	T = 8.04 P(t>2.5)<.01
Male, weigh-in	346	102.042	± .505
Female, weigh-in	195	101.975	± .567
		.067 diff.	T = 1.4 P(t>2.5)>.01
Weigh-in	271	102.064	± .568
Weigh-out	271	102.055	± .591
		.009 diff.	T = .18 P(t>2.57)>.01
Weigh-in, over 102.9 F.	17	103.37	± .47
Weigh-out, same dogs	17	102.61	± .56
		.76 diff.	T = .22 P(t>2.921)>.01

Pre-race and post-race body temperatures of schooling dogs were always taken as paired temperatures on the same dog. In each instance, the post-race temperature was higher than the corresponding pre-race temperature.

When body temperatures at the kennel were compared with weigh-in temperatures, a significant difference was also found. The mean temperature difference was 1.847 degrees with the higher, of course, being found at weigh-in. There were probably several factors involved. Exercise, excitement, and increased environmental temperature were all present and may have contributed to the higher weigh-in temperature.

The dogs had some exercise after being turned into the exercise pens at the kennels, and were again exercised when walked at the track before being weighed in. The

exercise was seldom strenuous either time the dogs were exercised prior to weigh-in.

Excitement was undoubtedly a factor, as dogs soon become conditioned to expect to run when taken to the track. The ride to the track, presence of other strange dogs, and familiar sights and sounds associated with the idea of racing add to the excitement.

Environmental temperature increased appreciably from the interior of the kennels, which were shaded and frequently had some type of air conditioning, to the hot trailers and trucks which carried the dogs to the track. During the summer the period from 4:30 to 5:30 p.m., when many of the dogs were standing in the sun, is one of the hottest parts of the day.

None of the other groups which were compared in this study showed a significant difference. The mean difference between males and females at weigh-in was only 0.067 degrees. This finding is in agreement with the writer[5] who stated that sex has but little influence on body temperature. However, it did not support the contention of many authors that sex is one of the influencing factors.

Mean weigh-in temperature was only 0.009 degrees higher than weigh-out temperature. This difference is not significant even though the dogs had been confined to lock-out kennels for a minimum of two hours between the time weigh-in and weigh-out temperatures were taken. This fails to support the statement[4] that when a dog's temperature is elevated upon arrival at the track, it always falls to normal after one or two hours' rest in the kennel.

Even when the highest weigh-in temperatures, those over 102.9 F., were isolated and compared with weigh-out temperatures of the same 17 dogs, no significant difference was found. However, in these 17 dogs, mean weigh-out temperature was 0.76 degrees lower than mean weigh-in temperature.

The arrangement of these particular lock-out kennels might give a partial answer to the question of why the temperatures did not drop more after a confinement of two hours or longer. It is true the dogs were locked in individual cages, but these cages are arranged so that each dog can see and hear the spectators, most of the other dogs, and preparations for each race. Conditioning of these dogs is such that they become quite excited whenever they hear the mechanical rabbit in operation. Whenever schooling races are held between weigh-in and the start of official races, the dogs hear the lure operate at least five or six times each night.

SUMMARY

Body temperatures of greyhounds were taken at a kennel club at Denver, Colo., with an electric thermometer.

Pre-race body temperatures were significantly lower than post-race temperatures of the same dogs, each dog having run 540 yards.

Body temperatures of dogs taken at kennels were significantly lower than temperatures of other similar dogs at weigh-in at the race track approximately one hour later. Temperatures of only 69 of the 271 dogs were taken at the kennels due to the consistently normal temperatures encountered and to the fact that statistical formulas make the comparison of unequal numbers of observations possible.

Weigh-in body temperatures of male dogs did not differ significantly from those of female dogs.

Body temperatures of dogs at weigh-in did not differ significantly from their temperatures two hours later at weigh-out. Seventeen dogs in this group had weigh-in temperatures of over 102.9 F., but these did not differ significantly from weigh-out temperatures of the same dogs.

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Breed Differences in Age of Eruption of Bovine Incisor Teeth

Determining the age of horses by their incisor teeth has long been a fairly accurate procedure. There seemed to be little breed or environmental difference. (We did see, in World War I, mules from Spain that would confound the experts. They retained the "cups" of youth in long, arched teeth which were typical of advanced age.)

However, there still are differences of opinion regarding the reliability of determining the age of cattle by the time of eruption of their incisor teeth.

At the turn of the century, various bulletins gave the eruption table for the permanent incisor teeth of the ox roughly as 2, 3, 4, and 5 years from the medial to the lateral pair, respectively. Huidekoper's text (1903) gives the eruption time table as 20, 30, 39, and 48 months, and Sisson and Grossman (1953) give it as 18-24, 24-30, 36, and 42-48 months, respectively.

A survey made about 1930, in central Iowa, indicated that, in purebred herds of several dairy and beef breeds, the usual ages of eruption were 18-21, 27-30, 36, and 38-45 months, respectively, for all except the Brown Swiss breed. In several Brown Swiss heifers observed, eruption was later by several months than in all other breeds.

This apparent breed variance suggested that the older tables published might have been based on a breed difference rather than on a rapid evolutionary change which conceivably could have been due to improved nutritional conditions in recent decades. A study of European oxen, many of which may have been Brown Swiss, could have accounted for the difference in the tables reported.

We were reminded of this discrepancy by a French article (p. 564) on eruption time of the teeth of the native Charolais cattle. This recent survey, involving a breed which is relatively new in America, gives the eruption table as an average of 24, 33, 43, and 48-52 months, respectively.

Could this be due to a breed difference, could it be typical of several mainland European breeds, or could it be the result, at least in part, of environmental conditions?

Whatever the reason, we should be alert to such discrepancies when attempting to make age estimates based on the time of eruption of bovine incisor teeth.

Recognition of a need for knowledge regarding determining the age of young cattle by their teeth was stimulated when, several years ago, an award was withdrawn from a 4-H calf, at the International Livestock Exposition in Chicago, because the animal was found to be older than the class age limit. Since then, the incisor teeth of all 4-H calf entries must be examined by appointed veterinarians before the animal can enter the show ring (*J.A.V.M.A.*, July 15, 1956: 81).

Artificial Insemination by Owners

An arresting item appeared in a southwestern newspaper on March 22, 1959. A professor in the dairy husbandry department of a state-supported college was to visit the city for the purpose of teaching local dairymen how to artificially inseminate their own cows. The county agent was reported to have said that by learning artificial insemination dairymen would not have to wait for the technician to visit their farms.

We wonder if this paragon of a teacher can, in a few days' time, teach farmers enough basic anatomy, physiology, endocrinology, pathology, and bacteriology to enable them to do a job of artificial insemination that will not cost them dearly in the long run.

In that area of the Southwest, where dairy farming is not extensive and where trained artificial inseminators may not be available, the veterinary practitioners will probably not be greatly concerned about such classes for owners. However, some aspects of this type of activity are disturbing. Owner-instruction in artificial insemination is contrary to the best interests of dairymen.

Surely this is a problem that merits the open-minded exchange of opinion among the officials of colleges, organizations of A.I. technicians, artificial breeding associations, extension groups, and organized veterinary medicine.

Current Literature

Abstracts

Infection of Calves with Coccidia and Nematodes

To determine the effects of single or concurrent infections with Eimeria spp. and the medium stomach worm, *Ostertagia ostertagi*, 3 young calves in each of three groups were infected with single or mixed infections and 2 others were left as controls. One month after killing 1 calf from each test group on the twenty first day, the remaining calves were given challenge inocualtions with the same organisms as before.

In the first test, only 1 calf (with both infections) had extremely high oocyst counts, predominantly *Eimeria ellipsoidalis*, on three consecutive days. During the first 21 days, the calves given Eimeria spp. alone had diarrhea about twice as often as the other two parasitized groups combined. Weight gains were comparatively low in the three parasitized groups.

In the second test, only 1 calf (Eimeria spp. only) had an extremely high oocyst count and it was due to *Eimeria alabamensis*. Only the calves in the Eimeria and the Eimeria-Ostertagia groups were diarrheic, with an average of 5.5 and 6.0 days, respectively. Clinical signs of parasitism were more evident in the Eimeria-infected than in the Ostertagia-infected calves.

The worm-infected calves gained an average of 19.0 lb. in 21 days while the other infected groups lost 0.5 to 1.5 lb. The younger calf in each parasitized group died between 26 and 39 days after the challenge inoculations. The combination of the Eimeria attacking the intestine and the Ostertagia attacking the abomasum apparently did not enhance the development of either parasite.—[*Leonard Reid Davis, Harry Herlich, and George W. Bowman: Studies on Experimental Concurrent Infections of Dairy Calves with Coccidia and Nematodes. II. Eimeria Spp. and the Medium Stomach Worm, Ostertagia Ostertagi. Am. J. Vet. Res., 20, (May, 1959): 487-491.*]

Study on the Ovary of the Sheep

The genital tracts of 60 Scottish ewes were used for this study and the specimens represented a complete sexual cycle.

Ovogenesis, follicular development, the presence of multinuclear ovocytes and polyovular follicles were found only during proestrus and estrus. During metestrus and diestrus, an atretic wave had destroyed many of the follicles.

The follicular development during the sexual cycle followed that of other mammals; it was shown, however, that the two growth periods (the fast and the slow) can be put on a continuous curve and do not need to be separated as is customarily done. The presence of lipid was established in the theca interna of the graafian follicles and in the lutein cells of the corpus luteum.

The enzyme alkaline phosphatase (glycero-) was found in the cytoplasm of the theca interna, to some extent in the theca externa cells, and in those lutein cells which originated from the theca interna. PAS-positive reactions were obtained in the granulosa cell layer, liquor fulliculi, the macrophages in the corpora albicantia, and the strength of the reaction was found to increase in atrophying follicles.—[*Robert Hadek: Morphological and Histochemical Study on the Ovary of the Sheep. Am. J. Vet. Res., 19, (Oct., 1958): 873-881.*]

Hemolysin of Leptospira Pomona

Data concerning time and temperature variables indicate that an hemolysin associated with *Leptospira pomona* is enzymatic in nature. Chicken, guinea pig, mouse, human, hamster, rabbit, cattle, and sheep erythrocytes were susceptible to the hemolysin, in that order, with chicken erythrocytes the most resistant and sheep erythrocytes the most susceptible.

Cephalin, lecithin, saponin, and sodium lauryl sulfate inhibited, incompletely, the activity of the hemolysin *in vitro*. Concentrations of lecithin, varying from 3 to 4 per cent in 0.5-ml. quantities, prolonged the life of hamsters which had been previously injected intraperitoneally with pathogenic cultures of *L. pomona*.

The availability of stroma phospholipids may indicate the relative susceptibility of erythrocytes of different animal species to the hemolysin, whereas the protection offered by lecithin may be due to a substrate competition effect.—[*Saul Rogols, William Fizette, and Edward Bohl. Studies on the Relationship of a Phospholipase to the Hemolysin of Leptospira Pomona. Am. J. Vet. Res., 20, (May, 1959): 592-596.*]

Books and Reports

Histo-Pathological Technique

This book discusses histopathological techniques used in veterinary medicine. The first chapters describe the necessary laboratory equipment, the preparation of various staining dyes, and the fixation and decalcification of tissues.

The main part of this publication is on the principles of staining methods used for specific examinations of various types of tissues affected by pathological conditions. Other parts are devoted to various sectioning methods used for the histopathological examination of animal tissues, microscopic examination of histopathological slides and, finally, prescriptions of important formulas used for the staining of slides.

The book is an excellent contribution to laboratory veterinary medicine.—[*Pathologisch-Histologische Technik (in German). By G. Pallaske and E. Schmidel. 233 pages; 36 illustrations. Paul Parey, Berlin, Germany. 1959. Price $9.90.*]—F. KRAL.

THE NEWS

United States Participants in XVIth International Veterinary Congress

Thirty-one representatives from the United States addressed the XVIth International Congress in Madrid, Spain, May 21-27, 1959. Immediately following is the list of the American speakers and their respective subjects:

Sessions & Sections

Drs. W. A. Hagan—veterinary science in society;
A. H. Wolff—nuclear energy and veterinary science;
Jacques Jenny—bone and joint surgery in large animals;
Frank Kral—canine dermatoses;
J. H. Steele and K. F. Meyer—international cooperation in zoonotic diseases;
E. S. Tierkel—sylvatic rabies;

Subsections

W. S. Bailey—esophageal sarcomas associated with canine Spirocerca lupi infection;
P. J. Brandly—pathology encountered in a year of meat inspection;
Hugh Butler—new tenorrhaphy technique;
D. K. Detweiler—study of cardiovascular diseases among 1,000 dogs;
J. R. Gorham—virus enteritis in mink;
J. B. Herrick—artificial insemination in the United States;
Salo Jonas—fracture repairs with the Jonas Splint;
Levon Kalantar—treatment of canine acanthosis with thyroid stimulating hormone;
Jack O. Knowles—method of internal fixation for the repair of luxations of the hip joint;
U. S. Grant Kuhn, III—preservation of foods by ionizing radiations;
Keith Maddy—studies in progress on coccidioidomycosis in Arizona;
William G. Magrane—canine glaucoma;
Kenneth McEntee—histopathology of sterility in the bull-testicular lesions;
Hans Meier—canine cancer chemotherapy;
Ival A. Merchant—mutual benefits from the relationship of veterinary medicine with other medical professions;
Clarence H. Pals—safe, wholesome meat;
W. R. Pritchard—syndrome called mycotic stomatitis of cattle;
A. H. Quin—practitioner usage of rapid plate antigens for the field diagnosis of leptospirosis;
Wayne H. Riser—canine skin tumors;
Miodrag Ristic—morphological and serological characteristics of Anaplasma marginale;
Leon Saunders—hereditary diseases of the nervous system;
Samuel F. Scheidy—pharmacology of certain phenothiazine ataraxias;
W. M. Swangard—new substance for the adsorption and concentration of bacterial vaccines;
Myron Thom—roentgen therapy in equine lameness.

Further Doings in Madrid

In addition to the XVIth International Veterinary Congress, Madrid is also the site of an International Trade Fair which opened on May 23 while the Congress was still in progress and which will continue until June 23.

The entire U. S. display is built around a dairy demonstration where recombined milk and ice cream from nonfat dry milk and anhydrous milk fat are being sampled throughout the month. Ingredients for the display are being furnished by the U. S. Department of Agriculture's Foreign Agricultural Service.

The dairy demonstration was chosen to highlight the Fair because the Madrid area has a real need for a market milk supply. Pasteurizing is limited and the cattle of the area are unable to meet the city's potential milk requirements. Recombining has created a great interest among Spain's dairy officials seeking means of supplementing local supply with a quality product.

Dr. Jungherr to Retire from University of Connecticut

Dr. Erwin L. Jungherr (VI '22), an internationally renowned scientist in poultry pathology and head of the Department of Animal Diseases at the University of Connecticut, will retire July 1.

Dr. Erwin L. Jungherr

Dr. Jungherr has taught at the University and conducted research at the Storrs Agricultural Experiment station since 1930. He is responsible for a major share of the pioneering research in the role of viruses in poultry diseases.

One of Dr. Jungherr's best known achievements is his work in developing the science of avian his-

topathology. He made the first workable histological classification of avian leukosis complex as well as classifying the neuropathological diseases of fowl. He is also credited with the first diagnosis and report on bovine leptospirosis in the United States. Dr. Jungherr has also made significant contributions in the study of nutritional diseases, particularly those caused by deficiencies of vitamins A and E.

In 1958, Dr. Jungherr received the second annual $1,000 Animal Health Institute Research Award in Washington, D.C., for his disease studies, and in the same year, members of the Connecticut Poultry Association presented him with their Outstanding Service Award. In 1945, he had also received a $1,000 Borden Award for poultry research.

During his distinguished career, he has served as consultant to the Institute of Pathology of the Department of the Army, to poultry scientists in Iran, at the Armed Forces Institute of Pathology in Washington, and has conducted research at the Biological Warfare Laboratories in Frederick, Md.

Dr. Jungherr will join the American Cyanamid Company as a pathologist in the viral and rickettsial research laboratory in Pearl River, N. Y.

Joint Committee on Veterinary Education Meets

The Joint Committee on Veterinary Education met in Chicago, Ill., on Feb. 12, 1959, at AVMA headquarters. The Committee (pictured below) was comprised of one representative from the American Association of Land-Grant Colleges—Veterinary Division, the Association of Deans of American Colleges of Veterinary Medicine, the AVMA Council on Education, and the AVMA Executive Board. Serving as consultants to the Committee were: Drs. J. A. McCallam, AVMA Washington representative; H. E. Kingman, Jr., AVMA Executive secretary; and J. R. Hay, AVMA director, professional relations.

Brigadier General J. A. McCallam reviewed Congressional actions on matters related to federal aid during 1957-1958. One of the significant developments discussed was the adoption of a resolution by the Association of Land-Grant Colleges—Veterinary Division and the Senate, which endorsed the inclusion of veterinary schools in legislation providing federal aid for educational facilities in the health field.

Since there are justifiable reasons for considering a broadening of the scope of this group to extend into areas other than attempts to obtain federal or financial aid for veterinary education, the Committee chose as its name the Joint Committee on Veterinary Education and decided to broaden its scope, subject to the approval of cooperative groups.

A subcommittee, composed of Drs. H. E. Kingman, Jr., and J. R. Hay working in conjunction with Drs. Carl Olsen and Glenn Holm, was appointed to revise a booklet prepared in January, 1958, by the AVMA Council on Education and the Association of Deans of Colleges of Veterinary Medicine, entitled "Survey of Veterinary Medical Education." The new edition will include a section on graduate education and research.

Another meeting is tentatively planned for this June.

Dr. J. M. Murphy to Join University of Pennsylvania

Dr. James M. Murphy (UP '35), of the New York State College of Veterinary Medicine at Cornell University and an outstanding clinical investigator of bovine mastitis, has been appointed research professor of veterinary medicine, according to an announcement by Dr. Mark W. Allam, dean. He will assume his new post at New Bolton Center on July 1.

A native of Philadelphia, Dr. Murphy received his V.M.D. degree in 1935. His career in mastitis research began when he served briefly on the faculty of the Pennsylvania school from 1935 to 1937. Since then, he has devoted his time to mastitis research and problems, first at Rutgers University until 1946, then as professor of veterinary medicine at Cornell University.

On May 21, Dr. Murphy presented an all-day special seminar on mastitis and mastitis research, as part of the University of Pennsylvania's seventy-fifth anniversary.

Pictured to the left are members of the Joint Committee on Veterinary Education. The committee met in Chicago on February 12.

Left to right—Drs. Carl D. Olsen, Wisconsin; Glenn C. Holm, Oklahoma; Dan J. Anderson, Texas; W. W. Armistead, Michigan; and James E. Greene, Alabama.

American College of Veterinary Pathologists Announces 1959 Examination

Applications are now being accepted for the 1959 examination of the American College of Veterinary Pathologists. The applications will be considered at the time of the AVMA meeting in August and should be in the hands of the secretary-treasurer on or before Aug. 1, 1959—sooner, if possible.

The following general prerequisites are listed for the information of interested veterinarians. To be eligible, a candidate must:

Be a graduate of a veterinary school recognized by the AVMA.

Be a member in good standing of the AVMA.

Have qualified at some time to practice veterinary medicine by successfully completing the national or any state board examination.

Have completed at least five calendar years of professional experience, subsequent to graduation from veterinary school, at least two years of which shall be supervised training in pathology acceptable to the Council. At least one of the additional three years of professional experience shall be in teaching, research, or practice of veterinary pathology.

Submit to the Council a detailed statement of his qualifications, including references of any publications, and other evidences of his professional experience and competence.

Application forms and detailed information may be secured by writing to: Dr. T. C. Jones, Secretary-Treasurer, American College of Veterinary Pathologists, 180 Longwood Ave., Boston 15, Mass.

s/T. C. JONES, *Secretary-Treasurer.*

An Admiral Peary Dog Stamp Issued in April

In commemoration of Admiral Robert E. Peary's discovery of the North Pole, the postmaster general of the United States announced issuance of a four-cent Arctic Explorations stamp featuring the sled dogs that helped make the expedition possible. The first sale of the stamp took place on the fiftieth anniversary of the discovery at the admiral's birthplace in Cresson, Pa., on April 6, 1959.

The creation of the stamp is the culmination of many efforts for a dog stamp over a number of years. The campaign was spearheaded by Harry Miller, director of the Gaines Dog Research Center in New York.

First day cancellations may be obtained by writing to: Postmaster, First Day Covers Arctic Exploration Stamps, Cresson, Pa., with a remittance to cover the cost of the stamps.

Recipients of Ralston Purina Fellowship Awards

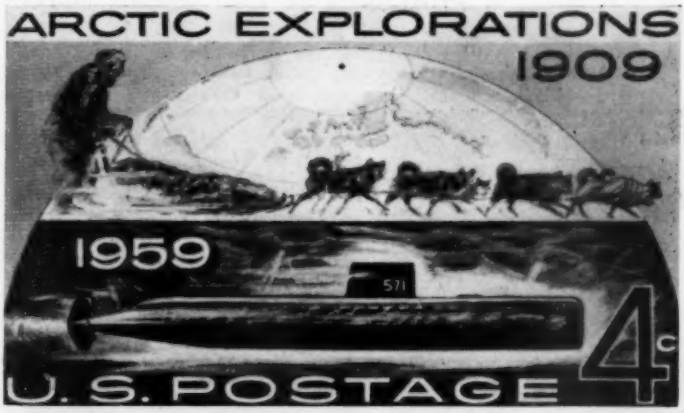
The awards committee for the Ralston Purina Research Fellowship program on March 30 selected ten winners and eight alternates for graduate study in agricultural research for the 1959-1960 school year (*see* the JOURNAL, Feb. 15, 1959, p. 196).

Recipient of the award in the veterinary science division is Dr. Max James Freeman of Madison, Wis., who graduated from Alabama Polytechnic Institute in 1958. He has chosen the University of Wisconsin in which to conduct his gradaute study.

Dr. C. A. Brandly, dean, University of Illinois, College of Veterinary Medicine, represented the AVMA on the awards committee.

Parliamentary Sheets Available

For those interested in presiding or taking an active part in medical meetings, Dr. George F. Schmitt (M.D.), 30 S. E. Eighth St., Miami, Fla., a registered parliamentarian, has published two sheets on parliamentary procedure. Send a stamped, self-addressed, legal-sized envelope for your free copies.



The new blue stamp (right) displays a drawing of Admiral Peary and the sled dogs which carried his expedition to the Pole. By way of contrasting the old and the new of arctic exploration, a picture of the U.S. Navy's atomic submarine, "Nautilus," was also integrated into the design.

The stamp has been authorized in an initial printing of 120 million. The artist is George Samerjan of Katonah, N. Y., who made documentary sketches of the area for the Air Force.

Manitoba
Dr. John R. Singleton
(ONT '49)

Maryland
Dr. J. Walter Hastings, Jr.
(UP '42)

Massachusetts
Frederick G. Ruder, Jr.
(UP '48)

Part II

Michigan
Dr. Charles H. Coy
(MSC '42)

Mississippi
Dr. James W. Patterson
(TEX '49)

Missouri
Dr. Wilbur H. Mowder
(KSC '38)

Presidents of Constituent Associations

Nebraska
Dr. Charles B. Schwab
(KSC '44)

New Brunswick
Dr. Dale M. Duplessis
(ONT '52)

New Hampshire
Dr. Frederick H. Stevens
(UP '50)

AMONG THE STATES AND PROVINCES

Alaska

State V.M.A. Is Organized in Alaska.—A meeting was held at the Arctic Health Research Center in Anchorage on Jan. 10, 1959, to organize the Alaska V.M.A. Dr. Fred S. Honsinger (WSC '49), state veterinarian, Juneau, was elected president and Lt. Colonel E. H. Akins (OSU '37), Fort Richardson, was elected secretary.

A committee composed of Drs. E. Barnes, K. R. Reinhard, and J. P. Pazaruski was appointed to draw up a constitution and bylaws as well as to investigate the possibility of a future practice act.

The remainder of the January program was as follows: Mr. James Wilson, commissioner of agriculture, Palmer—livestock regulation; Dr. F. S. Honsinger, Juneau—brucellosis program and the interstate shipment of animals; Lt. Colonel W. G. Phifer, Elmendorf Air Force Base—military program; Lt. Colonel E. H. Akins, Fort Richardson—Army procurement activities; Dr. R. Rausch, Anchorage—rabies, and hydatid disease; and Dr. K. R. Reinhard, Anchorage—Arctic Health Research Center activities.

California

State Association.—The California V. M. A.'s midwinter conference was held Feb. 2-4, 1959, at the School of Veterinary Medicine, University of California, Davis, with a near-record attendance.

Dr. Charles H. Reid (left) is shown during the large animal closed-circuit TV presentation at the mid-winter California V. M. A. conference. Dr. C. H. Burger (right) is pictured discussing some of the standard horse equipment useful to the veterinarian.

Out-of-state speakers included: Drs. J. H. Gillespie, Cornell University—canine distemper and infectious hepatitis; S. J. Roberts, Cornell University—ketosis of cattle, Caslick operation in the cow, techniques in teat surgery, and infertility in cattle due to ovarian diseases; and C. D. Lee, Iowa State College—salmonella and P.P.L.O. testing in Iowa and poultry practice.

Other speakers and their respective subjects in the large animal sessions were: Drs. P. C. Enge, Davis—use of tranquilizers in shipping beef cattle; H. G. Wixom, Sacramento—the California brucellosis control program; E. M. Plocher, Watsonville—a dairy herd reproduction program; and L. A. Baker, Turlock—a practitioner's approach to hardware disease.

Speakers on pet animal topics included: Drs. P. C. Kennedy, Davis—canine skin tumors; T. D. Harris, Jr., San Mateo—hospital management; W. J. Zontine, Lancaster—laboratory screening procedures; and C. H. Burger, Bakersfield—canine respiratory coccidioidomycosis.

An innovation in the Association's program was a clinical pathology short course. Moderators of the closed-circuit TV presentation were: Drs. C. H. Reid, Hollywood—large animals; and R. M. Cello, University of California—small animals.

• • •

Southern California Association.—The Southern California Veterinary Medical Association held a symposium on skeletal diseases at the Ambassador Hotel in Los Angeles on March 4, 1959. The following speakers presented papers: Drs. James Archibald, Ontario Veterinary College—skeletal pathology of the dog, and medical treatment; Jacques Jenny, University of Pennsylvania—biological and engineering principles of fracture repair; B. F. Hoerlein, Alabama Polytechnic Institute—vertebral surgical demonstrations; and R. L. Rudy, Ohio State University—traumatic and developmental abnormalities of the bones and joints.

• • •

San Fernando Valley Chapter.—The San Fernando Valley Chapter of the Southern California V.M.A. has elected the following roster for 1959: Drs. Ralph L. Reese, Calabasas, president; S. M. Child, Van Nuys, vice-president; Barbara G. Shirley, Canoga Park, secretary-treasurer; and Arodd W. Clark, North Hollywood, councilor.

Colorado

Mark L. Morris Animal Foundation Adds Trustees and Advisors.—Two new members have been added to the board of trustees and three new members to the advisory committee of the Mark L. Morris Animal Foundation in Denver.

Named to the Board of Trustees were: Drs. William A. Hagan, dean, New York State Veterinary College, Cornell University, and George R. Cowgill, professor of nutrition, Yale Uni-

versity. Both had previously served on the Foundation's advisory board.

Those appointed to the advisory board were: Drs. W. J. Zontine, practitioner, Lancaster, Calif.; William D. Carlson, associate professor and radiologist, Colorado State University; and Clarence R. Cole, professor of veterinary pathology, Ohio State University. Other members of the board are: Drs. Charles W. Bower, Topeka, and E. C. Stone, dean, State College of Washington.

The Foundation is currently sponsoring research projects at the State College of Washington, University of Minnesota, University of Illinois, Michigan State University, Alabama Polytechnic Institute, University of Pennsylvania, and Oklahoma State University.

Florida

Dr. Dee Named National Consultant to Air Force Medical Service.—Dr. Clarence E. Dee (ISC '39) has been named national consultant in Veterinary Medicine for the U.S. Air Force Medical Service. As national consultant, Dr. Dee will serve as advisor to the surgeon general on matters pertaining to Air Force veterinary medicine.

• • •

Dr. Emmel—A Fellow To N.F.M.R.—Dr. M. W. Emmel (ISC '19) has recently been named a fellow to the National Foundation for Metabolic Research by the board of trustees of that institution.

Indiana

Women's Auxiliary.—The Women's Auxiliary to the Northeastern Indiana V.M.A. recently elected the following roster: Mrs. H. M. Bonifield, Warren, president; Mrs. R. E. Allison, Decatur, vice-president; Mrs. C. R. Baumgartner, Spencerville, secretary; and Mrs. C. H. Weber, Fort Wayne, treasurer.

Being newly organized, the Auxiliary made their first donation this year to the AVMA Student Loan Fund and Research Fund. Mrs. V. K. McMahan, Fort Wayne, has again been chosen to represent Indiana as delegate to the national convention in Kansas City.

Mrs. Paul Hough and Mrs. Charles Weber, both of Fort Wayne, were co-hostesses of a breakfast held at the annual state association's meeting at the Hotel Severin in Indianapolis last January.

During the year, the Auxiliary presented programs which ranged from lectures on fashion to the Formosan situation and Red China.

Kansas

Kansas State College Will Now Be Known as Kansas State University.—On March 20, 1959, Governor G. Docking signed a bill changing the name of Kansas State College to Kansas State University of Agriculture and Applied Sciences, effective April 1, 1959.

Within a short time, it is expected that the State Board of Regents will approve changing the name of each "school" on the campus to "college."

Maryland

Training Program Held.—Six veterinary officers (pictured below) attended a Military Medical Training Program for Armed Forces Medical Department officers, at the U. S. Naval Medical School, National Naval Medical Center, Bethesda, March 8-22, 1959.

Left to right—Colonel R. N. Earhart, U.S.A.F.R., N Orleans, La.; Lt. Colonel W. B. Bell, U.S.A.R., Blacksb Va.; Lt. Colonel W. F. Sims, U.S.A.R., Knoxville, Tenn.; Colonel G. S. McKee, Fairfax, Va.; Major C. D. Dies A.R.N.G., Columbus, Ohio; and Dr. J. W. Atkin U.S.P.H.S., Washington, D.C.

The course was prepared as a basic guide to the medical problems and current research in the field of special and conventional weapons effect.

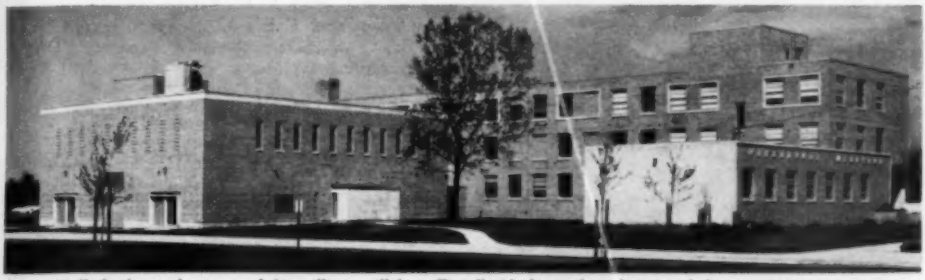
s/DR. WILSON B. BELL, *Correspondent.*

Ohio

Sisson Hall to Be Dedicated This June.—On June 16, Ohio State University will dedicate Sisson Hall, the new science building and headquarters for the University's College of Veterinary Medicine. Sisson Hall represents the completion of the first phase of a program to replace the present physical facilities of the College.

The first unit of the Hall, a three-story structure, was completed in early 1957, and an addition, housing the college library and lecture rooms, was built in 1958. The Veterinary Clinic and the pathology department remain, at present, in buildings on the University's East Campus. The second step in the rebuilding schedule will be the construction of a clinical unit building, now in the planning stage, which will be situated near Sisson Hall on the University's West Campus.

Sisson Hall is named in honor of Dr. Septimus Sisson, distinguished professor of veterinary anatomy who died in 1924. Dr. Sisson



Sisson Hall, built at the cost of $2 million, will be officially dedicated and opened for inspection on June 16. This event will be a highlight of the University's twenty-eighth annual spring conference for veterinarians.

wrote the textbook on anatomy which is used in nearly all colleges of veterinary medicine in North America and also in many abroad.

The dedication ceremonies will be part of Ohio State's twenty-eighth annual spring conference for veterinarians (June 16-17). The program is so arranged that veterinarians may attend any two of the nine conferences being offered. The meeting is expected to attract around 400 attendees from Ohio and the neighboring states.

Quebec

Drs. Cournoyer, Jacques, Wells, and Mitchell Attend the Madrid Congress.—Dr. Lucien Cournoyer (MON '48), president of the College of Veterinary Medicine of the Province of Quebec and dean of studies at the Saint-Hyacinthe School of Veterinary Medicine, and Dr. Ephram Jacques (MON '42), assistant to the dean, represented respectively the Quebec V.M.A. and the Saint-Hyacinthe Veterinary School at the XVIth International Veterinary Congress in Madrid, Spain, last May. They were sponsored by the provincial department of agriculture and the Quebec V.M.A.

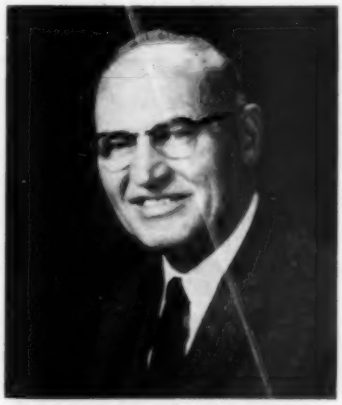
Dr. Kenneth F. Wells (ONT '38), veterinary director-general of Ottawa, and Dr. Charles A. Mitchell (ONT '14), editor of the *Canadian Journal of Comparative Medicine and Veterinary Science,* were other Canadian delegates to the Congress.

s/JACQUES SAINT-GEORGES, *Correspondent.*

Wyoming

Dr. P. E. Madsen Elected to Second Term in State Legislature.—Dr. Peter E. Madsen (COL '31) was elected for the second time to the Wyoming State Legislature, in 1958. He was first elected to this office in 1956.

Within the legislature, Dr. Madsen is a member of the ways and means committee and of the agricultural committee. In addition, he is a past president of the Wyoming V.M.A., Wyoming's 1958 delegate to the AVMA's National Convention in Cleveland, Ohio, and a member of the AVMA Council of Veterinary Service.



Dr. Peter E. Madsen

s/DR. J. F. RYFF, *Secretary.*

STATE BOARD EXAMINATIONS

KENTUCKY—June 17, 1959, State Capitol Building, Frankfort, Ky. Jack E. Winkler, Secretary-Treasurer, Kentucky Board of Veterinary Examiners, 319 Ann St., Frankfort, Ky.

MASSACHUSETTS—June 25-27, 1959, University of Massachusetts, Amherst. Address inquiries to Dr. Edward A. Blake, Secretary, Board of Registration in Veterinary Medicine, Room 33, State House, Boston 33, Mass.

MONTANA—June 22-24, 1959, Montana Veterinary Research Laboratory, Montana State College, Bozeman, Mont. For application blanks, write: Dr. J. W. Safford, Secretary-Treasurer, State Board of Veterinary Medical Examiners, Capitol Station, Helena, Mont.

NORTH CAROLINA—June 22-24, 1959, Morehead Biltmore Hotel, Morehead City, N. Car. Dr. James I. Cornwell, Secretary-Treasurer, North Carolina State Veterinary Examining Board, 65 Beverly Rd., Beverly Hills, Asheville, N. Car.

OREGON—June 15-17, 1959, Hotel Multnomah, Portland. Dr. C. R. Howarth, Secretary, Oregon State Veterinary Medical Examining Board, 135 N. Highway, St. Helens, Ore.

RHODE ISLAND—July 14-15, 1959, Veterans' Memorial Building, Room 505, Providence. All applicants must procure applications for the examination. T. J. Grennan, Jr., Secretary, State Board of Veterinarians, 505 Veterans' Memorial Building, Providence, R. I.

SOUTH DAKOTA—June 22-23, 1959, Brookings. Applications should be sent to Office of Livestock Sanitary Board, Pierre, S. Dak., Dr. M. D. Mitchell, state veterinarian.

WISCONSIN—June 29-30, 1959, Madison, Wis. A. A. Erdmann, 6 West St., State Capitol, Madison 2, Wis.

WYOMING—June 18, 19, 1959, State Capitol, Cheyenne. For further details write Dr. G. H. Good, 304 Capitol Bldg., Cheyenne, Wyo., secretary.

DEATHS

Star indicates member of AVMA

John T. Barrett (MCK '18), Chicago, Ill., died from a heart attack, April 21, 1959.

Dr. Barrett was inspector in charge of the state of Illinois, Division of Livestock Industry office, in the Union Stock Yards, Chicago, since 1955. He had spent his entire professional career in and around the Union Stock Yards.

Stanley C. Cook (CIN '06), 74, Cincinnati, Ohio, died April 3, 1959.

Dr. Cook had been with the BAI for 45 years in New Orleans, La.; East St. Louis, Ill.; Cleveland, Tenn.; Fort Worth, Texas; Chicago, Ill.; and Cincinnati, Ohio. He retired in 1951.

Maurice H. English (CVC '12), 70, Sheldon, Iowa, died on March 30, 1959, after a long illness. He had practiced in Sheldon for 34 years before retiring in 1950.

Jacob T. Jacobson (STJ '09), 91, Winthrop, Minn., a veterinarian there for 50 years, died April 9, 1959.

Dr. Jacobson had retired from practice several years ago, but had kept his interest in harness racing horses, competing in county fairs last fall. In addition to his wife and daughter, he is survived by two sons who are also veterinarians: Drs. Jesse A. (MIN '55); and Leslie T. (ISC '50).

Julius M. Maurer (ZUR '24), 58, White Plains, N. Y., died of a heart attack on April 5, 1959.

Born in Zurich, Switzerland, Dr. Maurer came to this country in 1927. He was one of the few remaining large animal practitioners in the southeast New York area. Dr. Maurer also had taught veterinary surgery at Cornell University for two years.

★**Colonel John A. McKinnon** (ONT '97), 85, San Francisco, Calif., U. S. Army retired, and the first veterinarian to serve as director of the Army Veterinary Corps, died on April 14, 1959, following a prolonged illness.

Born in Canada in 1874, he obtained his V.S. degree at Ontario Veterinary College in 1897 and in 1911 was awarded the B.V.Sc. degree by the University of Toronto, the parent institution. In the meantime, he had come to the states, became a citizen, and in 1902 was appointed a contract veterinarian with the Army Quartermaster Corps. When the Army Veterinary Corps was established, in 1917, he was commissioned a first lieutenant in the Regular Army, was promoted to captain in 1918, and saw duty in the Philippine Department and with the A.E.F. in Siberia.

He later attended the Army Veterinary School, graduated in 1920, and was promoted to the grade of major. He was assigned to duty in the Surgeon General's Office in Washington, served as assistant to the then director of the Army Veterinary Corps, Colonel C. F. Morse, M.C., and was made director when the latter retired, serving from October, 1922, to May, 1926. He was promoted to the grade of colonel in 1928.

Colonel McKinnon retired in 1938. He joined the AVMA in 1910 and was recently made a life member. He is survived by his widow, Leila Stark McKinnon, and two married daughters. Services and interment were at the National Cemetery, Presidio of San Francisco.

★**Charles A. Mitchell** (KSC '36), 48, Hugo, Okla., died March 22, 1959, from injuries received in an automobile accident near Hugo.

Dr. Mitchell was a field veterinarian for the state. Before moving to Oklahoma, he had operated a dog and cat hospital in Cheyenne, Wyo.

George G. Neilson (OSU '19), 64, Roseville, Ill., died April 5, 1959, at his home, from a heart ailment.

Born in Monmouth Ill., Dr. Neilson located in Roseville 38 years ago. He is a former mayor of Roseville.

★**Edwin W. Roberts** (OSU '16), 66, Reynoldsburg, Ohio, died April 13, 1959, after a long illness. He was made a life member of the AVMA in 1958.

Dr. Roberts had devoted 42 years to the Division of Animal Industry in the Ohio Department of Agriculture.

★**Harry P. Wynne** (COR '18), 65, Endicott, N. Y., died at Ideal Hospital there, on April 4, 1959, after a short illness. He was a life member of the AVMA.

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HORSES
CATTLE
SWINE

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Department of Veterinary Medicine
PARKE, DAVIS & COMPANY
Detroit 32, Michigan

Mark Twain's statue looks out over his beloved Mississippi River. A river pilot himself, Samuel Clemens adopted his pen name from the call "Mark Twain," used by Mississippi pilots in taking soundings on the river.

Joint AVMA-Pan American Meeting Kansas City, August 24-27

Markers in Missouri's History

■ Missouri has made its mark on the history of the Nation, and its stamp is colorful with the personalities who helped it to become a state.

DeSoto of Spain and LaSalle of France were the first white men to visit the area now included in Missouri. Meriwether Lewis and William Clark opened the vast new territory of the Louisiana Purchase following its acquisition from France in 1803. Their point of departure for the territorial survey was St. Louis, Mo.

Their footsteps were later traced by a young man from Franklin, Mo., who ran away from home. Regarded as the most famous of the frontiersman, this Indian fighter, trail blazer, and Ned Buntline hero was Kit Carson.

John Charles Fremont is another famous name in the history of Missouri. Soldier, pathfinder, and "liberator" of California, he was the first Civil War commandant of the Department of the Missouri, and contender for presidential nomination at the Republican Convention of 1856.

Jim Bridger, mountain man, discovered the Great Salt Lake after battling blizzards as well as Sioux and Blackfeet Indians. He returned to Missouri to end his days as a dirt farmer.

Daniel Boone pushed westward from Kentucky after the Revolutionary War to find the wilderness solitude he loved so well. He established a post at what is now Warrenton, Mo. As civilization caught up to him, he again moved westward and established the last of his settlements at Franklin, originally Boonville.

William H. Ashley of Missouri blocked out and blazed the Oregon Trail for westbound migrants out of St. Louis.

TOM SAWYER'S FENCE
HERE STOOD THE BOARD FENCE
WHICH TOM SAWYER PERSUADED
HIS GANG TO PAY HIM FOR THE
PRIVILEGE OF WHITEWASHING.
TOM SAT BY AND SAW THAT IT
WAS WELL DONE.

The annual fence-painting contest at Hannibal, Mo., in which the genius of Tom Sawyer reasserts itself over the years—his fence keeps getting painted, although he hasn't done a lick of work on it yet.

—Photos courtesy Massie-Missouri Resources Division.

John Colter, discoverer of that strange and wonderful world sacred to the Indians, is buried in Missouri. His discovery is now known as Yellowstone National Park, with its spouting geysers, hot springs, and boiling mud.

The divided loyalties in Missouri during the Civil War which resulted in relentless guerilla fighting, led to the embitterment and outlawry of Jesse James. He was born in northwest Missouri and killed in St. Joseph by one of his own gang.

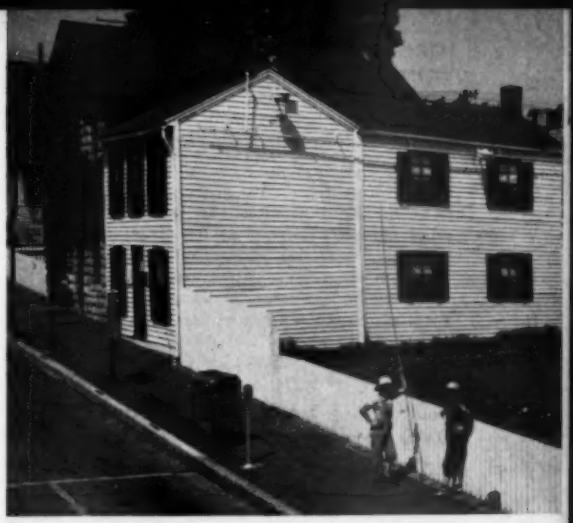
Other Missourians, both native to the state or adopted, include Moses Austin, father of Stephen Austin; General Omar Bradley, born at Clark, Mo., who made his mark during World War II; and General John "Blackjack" Pershing of World War I, whose boyhood home still stands at Laclede.

Following the Civil War and before becoming our 18th president, Ulysses S. Grant built a home in St. Louis County. The house is still there, preserved, but is not yet established as a museum. Harry S. Truman keeps his residence in Independence.

In the literary field, Missouri has contributed Harold Bell Wright, author of "Shepherd of the Hills;" poet Eugene Field, whose birthplace in St. Louis is a museum; and Samuel Clemens, perhaps better known by his pen name, Mark Twain. At Hannibal, memorials of this great writer include the Mark Twain statue, his boyhood home, Becky Thatcher's home, the statue of Tom Sawyer and Huck Finn, and Mark Twain Cave.

George Washington Carver, the great Negro scientist, was born in slavery near Diamond, Mo. The home of Dr. John Sappington, who pioneered in the use of quinine against malaria, remains in Arrow Rock.

Proud of its native and adopted sons and daughters, Missouri has marked most of their residences or the scenes of their triumph with museums or memorials well worth the seeing.



Mark Twain's boyhood home in Hannibal, Mo. The adjacent vine-covered building is the Mark Twain museum, where mementos of this great American humorist are on exhibit.

A modern Tom Sawyer and Becky Thatcher (right, center) explore the Mark Twain Cave in Hannibal. Aside from being the source of inspiration for Tom's adventure with Injun Joe, the cave is noteworthy for its curious and beautiful stalactite and stalagmite formations.

A riverfront scene as Mark Twain knew and wrote about in his "Life on the Mississippi."

Kansas City Housing

Hotel information, rates and reservation form will be found on adv. pages 51 and 52 of this issue, facing a location map for hotels and some other centrally located points of interest on adv. page 50.

The Kansas City Convention and Visitors Bureau will handle reservations and is now ready to function. Early reservations are advised.

+ + +

Joint AVMA—A.D.S.A. Committee on Dairy Cattle Health

The Joint Committee on Dairy Cattle Health of the American Dairy Science Association and the American Veterinary Medical Association met at the AVMA offices on April 14, 1959. Representing the A.D.S.A. were: Dr. W. A. King, Clemson, S. Car.; Prof. W. A. Dodge, Burlington, Vt.; and Prof. E. T. Itschner, Columbia, Mo. AVMA representatives were: Drs. J. L. McAuliff, Cortland, N.Y.; R. O. Anderson, Elkhorn, Wis.; W. J. Kilpatrick, Mediapolis, Iowa; M. G. Fincher, Ithaca, N.Y.; and S. L. Kalison, Blacksburg, Va.

The Subcommittee on Mastitis submitted a list of management practices for mastitis control which was approved by the Joint Committee. The manner in which several states are dealing with this problem will be studied at the next meeting.

Following a report by the Subcommittee on Brucellosis, the Joint Committee voted to urge the range states to remain in the integrated brucellosis program rather than resort to calfhood vaccination only.

It was also decided to send farm publication editors a copy of the report "ARS 91-9, Cooperative State-Federal Brucellosis Eradication Program," along with a letter urging them to use it to stimulate interest of their readers in the brucellosis program.

A comprehensive program of preventive medicine for the dairy industry was also studied and adopted. The material in this program, comprising approximately 68 points, is similar to that expected of a dairy husbandry extension bulletin.

The leptospirosis problem was discussed and it was unanimously recommended that research on this disease be intensified, and that "all agencies" make the farmer more aware of the problem.

With respect to the use of antibiotics in feed, the Joint Committee resolved that: "On the basis of the limited controlled research available, we are not in a position to recommend the use of antibiotics in the rations of milking cows either from the standpoint of disease control or stimulation of milk production."

The next meeting of this committee will be sometime in October, 1959.

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Spanish Conversation

Habla Espanol?

Since the AVMA Convention in Kansas City will be held jointly with the Pan-American Congress, with approximately 400 Spanish-speaking veterinarians and visitors, the next four issues of the JOURNAL will carry phrases of simplified Spanish conversation.

Although conscientious study of these little lessons will not transform you into a fluent linguist, you may find that to your satisfaction, you can exchange greetings with our Latin American neighbors in Kansas City.

Esta es la senora. . . *ES-ta es la sen-YO-ra*	This is Mrs. . . .
Este es el senor. . . *ES-tay es el sen-YOR . . .*	This is Mr. . . .
Encantado! *en-kan-TA-doe*	Delighted to meet you! (masc.)
Encantada! *en-kan-TA-da*	Delighted to meet you! (fem.)
Quiere Usted acompanarme? *kee-AIR-ay oo-STETH a-kom-pan-YAR-may*	Do you want to come along?
con mucho gusto! *kon MOO-cho GOOS-toe*	Gladly!
Habla Usted espanol (ingles)? *AV-la oos-TETH es-pan-YOL (ing-LES)*	Do you speak Spanish (English)?
Hablo un poco. *AV-lo oon PO-ko*	I speak a little.

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infectious diarrhea, pre- and postoperative intestinal antisepsis:

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Meeting of the AVMA Council on Public Health and Regulatory Veterinary Medicine

The Council on Public Health and Regulatory Veterinary Medicine met in Chicago on March 26 and 27, 1959, with all members present.

The Council's representatives to the Fourteenth National Conference on Rural Health made the following report:

The 14th National Conference on Rural Health, sponsored by the American Medical Association's Council on Rural Health, was held in Wichita, Kan., March 5-7, 1959, and was attended by approximately 700 representatives of medicine, farm groups, governmental agencies, and other lay groups.

The American Veterinary Medical Association was represented by Drs. J. L. McAuliff of Cortland, N.Y., and Martin P. Hines of Raleigh, N. Car.

Dr. F. S. Crockett, chairman of the A. M. A. Council on Rural Health, reviewed the history, progress, and challenges ahead of the council. Dr. Crockett emphasized the fact that through the work of the council and farm groups, communities previously without physicians have obtained them, insurance programs for rural groups have been set up, and the general health situation of rural communities has improved.

Dr. Louis M. Orr of Orlando, Fla., president-elect of the A. M. A., spoke to the opening session and emphasized the need for rural practitioners. Dr. Orr stated that of 15,000 applicants to medical schools last year, there were 8,000 positions. He also stressed the fact that of the 15,000 applicants only 50 per cent were qualified, so "we actually have a surplus of positions." "How can we persuade people to go into medicine?" was a question raised by Dr. Orr that seems to be very appropriate to the profession of veterinary medicine also. Dr. Orr said that "the advantages of rural life over the 'rat race' life frequently found in the cities should be stressed, and that equipment, communications, good drugs, and other things of the future will be available just as quickly in the country as in the city."

The "Do-It-Yourself Age" was discussed by Dr. Earl L. Butz, dean of agriculture at Purdue University. Dr. Butz said there were many new trends in America, such as fixing and making repairs around the house, but that in other areas it is a different trend—that of looking to the federal government. Dr. Butz said we have rightly decided that we are going to have good public health, but the problem is the route we will take to get it. He said that farming has become a way of making a living, rather than a way of life.

Dr. Butz warned of the danger of moving decisions to Washington when they could best be handled by local government. We live in an age of "welfare state" and the key word is security. "If we do not provide equal reward and opportunities for all, including health at the local level, the great white father will," said Dr. Butz.

A special feature of the meeting was a workshop dealing with community health participation. The workshop demonstrated how citizens of a Kansas community meet and discuss their community health problems, and how they can obtain community participation in their solution. Your AVMA representatives heard several comments from those attending the conference that our presence at this meeting reminded them that they should always bring their local veterinarian into these projects as a valuable member of the health team.

Other topics covered in the three-day meeting were mental health, aging, nutrition, dental health, costs of medical care, and health insurance.

Mrs. Kenneth D. Schneider, wife of a rural physician, gave a delightful talk on the real joys of living and practicing in a small rural town. Although this talk was aimed at pointing out that life was far from dull for a country doctor and his family, it could be applied to a veterinarian and his family. We would like to suggest that the AVMA obtain a copy of this talk and consider getting young wives of veterinarians to make similar talks regarding the advantages of living in a small rural town. This may be one method of encouraging young veterinarians not to leave large animal practices for the bright lights of the big cities.

In conclusion, it is the opinion of your representatives that the contacts made with leaders

AVMA Council on Public Health and Regulatory Veterinary Medicine. Front row: Drs. E. S. Tierkel, Au Winter, R. K. Anderson, and Oscar Sussman. Back row: Drs. H. G. Geyer, S. L. Hendricks, Elmer W. Young, J. W. Cunkleman, and C. D. Van Houweling.

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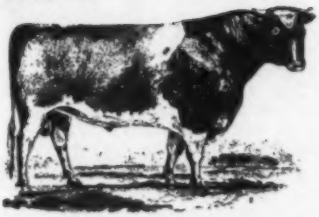

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Edema from insect bites

Nonspecific stomatitis in cows

Dosage: See CIBA Veterinary Therapeutic Index.

*Chambers, E. E.: N. Am. Vet. 37:105 (Feb.) 1956.

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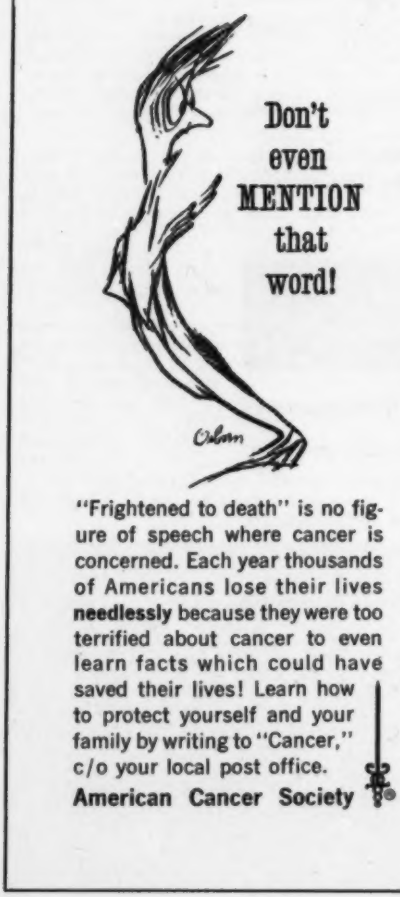
CIBA
SUMMIT, N. J.

in farm groups, allied medical organizations and others, will help our profession a great deal in public relations. We were certainly well received by everyone including the paper which was presented on animal disease at the Saturday morning session. We have attached copies of articles appearing in the Wichita newspapers and the program relative to our participation. We appreciate the privilege of representing the AVMA at this important national meeting.

The Council also received a report from its representative to the National Health Council Forum on Occupational Health, and agreed that effort should be made to have one or more technical papers by AVMA representatives included on the program of the National Health Conference Symposium on Gerontology, scheduled to be held in Florida in 1960.



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American Cancer Society

One of the members reported that a brochure on rabies had been prepared for the United States Junior Chamber of Commerce.

The Council accepted the report of its Committee on Food Hygiene which recommended that:

1) The Council reaffirm its approval of the use of lay inspectors under supervision of veterinarians in poultry and meat inspection programs but condemn programs wherein lay and veterinary inspectors are employees of the plants;

2) That several AVMA councils jointly invite scientists to form a select panel for the purpose of evaluating available facts pertaining to antibiotic and chemical residues in food;

3) That the Council consult with personnel of several pertinent federal agencies and prepare an action program designed to promote interest in, and encourage adoption of, acceptable meat and poultry inspection programs at state and local levels;

4) That the Council direct the Committee to develop a code of procedures for use as a guide in meat and poultry inspection programs.

The Committee on Educational Qualifications and Training requested that its work be continued, its recommendations to be reviewed with reference to the American Public Health Association report, "The Educational Qualifications of Public Health Veterinarians," and with reference to the interests of other groups such as the AVMA Council on Education and the United States Livestock Sanitary Association.

The Committee on Bylaws proposed that the bylaws of the AVMA be amended by adding the following two subparagraphs to paragraph b of Article V, Section 7, pertaining to the Council on Public Health and Regulatory Veterinary Medicine:

v) Recommend and encourage the development and support of programs designed to prevent, control, and eradicate animal diseases at the local, state, and national level.

vi) Keep before the profession the responsibilities shared by all veterinarians to *(a)* safeguard animal and human health by promptly diagnosing and reporting "reportable" diseases; *(b)* meet all applicable requirements in certifying to the health of animals; *(c)* and participate in accordance with applicable regulations in organized programs for the prevention, control, and eradication of animal diseases.

The Disease Review Committee reported progress made with respect to the preparation of technical reports on Q fever and leptospirosis.

The Council agreed that it should provide the Executive Board with the names of persons qualified to represent the AVMA at meetings of organizations pertaining to public health and regulatory medicine. The Council would expect to review the reports of such delegates.

The next meeting of this Council will be held in October, 1959, the exact date and place to be decided later.

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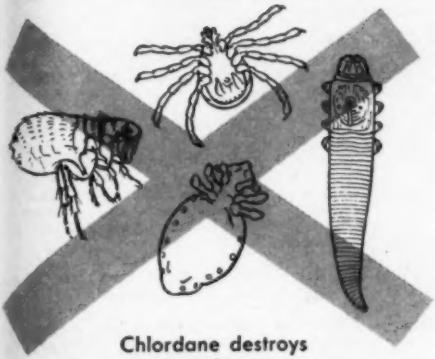

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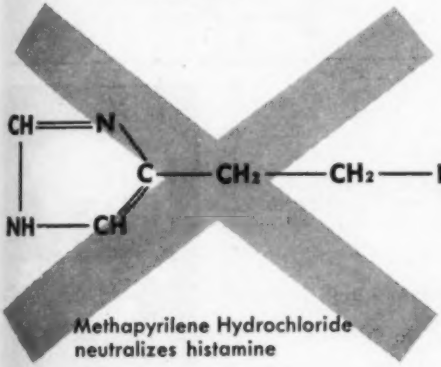

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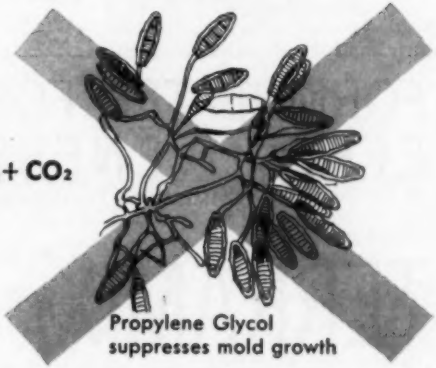

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COMING MEETINGS

Notices of coming meetings must be received 30 days before date of publication.

Ohio State University. Annual spring conference. College of Veterinary Medicine, Ohio State University, Columbus, June 16-17, 1959.

Utah Veterinary Medical Association. Annual meeting. Provo, June 17-18, 1959. J. A. Thomas, P.O. Box 592, Provo, Utah, secretary-treasurer.

Illinois, University of. Fourth Biennial Symposium on Animal Reproduction. University of Illinois, Urbana, June 18-20, 1959. Address P. J. Dziuk, 111 Animal Genetics, University of Illinois, Urbana, for further information.

South Carolina Association of Veterinarians. Annual summer meeting. Clemson House, Clemson, S. Car., June 18-20, 1959. B. C. McLean, 808 Linden St., Aiken, S. Car., program chairman.

Alberta Veterinary Medical Association. Annual convention. Jubilee Auditorium, Edmonton, June 19-20, 1959. H. N. Vance, 14323-106 A Ave., Edmonton, Alta., chairman.

Louisiana Veterinary Medical Association, Inc. Annual meeting. Virginia Hotel, Monroe, La., June 21-23, 1959. Dr. Walter Ernst, Jr., P.O. Box 2502, Monroe, La., local arrangements committee chairman.

California Veterinary Medical Association. Seventy-first annual meeting. Miramar Hotel, Santa Monica, Calif., June 21-23, 1959. Chas. S. Travers, 3004 16th St., San Francisco, executive secretary.

Maritime Veterinary Associations, joint conference. Mount Allison University, Sackville, New Brunswick, June 23-25, 1959. P. D. McKercher, Box 310, Sackville, general chairman.

North Carolina Veterinary Medical Association. Fifty-eighth annual summer meeting. Morehead Biltmore Hotel, Morehead City, June 23-25, 1959. J. T. Dixon, secretary-treasurer.

Maryland State Veterinary Medical Association. Summer meeting. George Washington Hotel, Ocean City, Maryland, June 25-26, 1959. Harry L. Schultz, Jr., Baltimore, Md., secretary-treasurer.

Nebraska Veterinary Medical Association. Summer meeting. Pawnee Hotel, North Platte, Neb., July 10-12, 1959. H. E. Hedlund, Wahoo, Neb., program chairman.

Kentucky Veterinary Medical Association. Forty-eighth annual convention. Sheraton-Seelbach Hotel, Louisville, Ky., July 13-14, 1959. L. S. Shirrell, 545 East Main St., Frankfort, secretary.

Iowa State College. Annual conference. Iowa State College, Ames, July 14-15, 1959. C. D. Lee, chairman.

Alabama Polytechnic Institute. Fifty-second annual conference. School of Veterinary Medicine, Alabama Polytechnic Institute, Auburn, July 19-22, 1959. J. E. Greene, dean.

(*Continued on adv. p.* 40)

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1. Harris, J.R., and Clarkson, T.B., Prevention of Relapses in Milk Fever, Vet. Medicine, *12*:696 (Dec. 1955)

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Canadian Veterinary Medical Association. Annual convention. Ontario Veterinary College, Guelph, Ont., July 20-22, 1959. H. J. Neely, Ontario Veterinary College, Guelph, Ont., publicity committee chairman.

Arkansas Veterinary Practitioner's Association. Annual meeting. Mather Lodge, Petit Jean State Park, Morrilton, Ark., July 26-28, 1959. W. H. Babbitt, 204 W. 13th St., North Little Rock, Ark., secretary-treasurer.

Mississippi State Veterinary Medical Association. Annual meeting. Buena Vista Hotel, Biloxi, Miss., July 26-29, 1959. J. W. Branson, P.O. Box 4223, Fondren Station, Jackson 6, secretary-treasurer.

American Association of Veterinary Bacteriologists. Annual meeting. Division of Veterinary Medicine, Iowa State College, Ames, Iowa, Aug. 22, 1959. C. H. Cunningham, Michigan State University, College of Veterinary Medicine, East Lansing, secretary.

Ninety-Sixth Annual Meeting, American Veterinary Medical Association, and Third Pan American Congress of Veterinary Medicine. Joint meeting. Kansas City, Mo., Aug. 23-27, 1959. H. E. Kingman, Jr., executive-secretary, AVMA, 600 S. Michigan Ave., Chicago 5, Ill. B. D. Blood, secretary-general, Directing Council, Pan American Congress of Veterinary Medicine, P.O. Box 99, Azul, F.C.N.G.R., Argentina, S.A.

Colorado Veterinary Medical Association. Annuel convention. Shirley Savoy Hotel, Denver, Colo., Sept. 3-4, 1959. Gail H. Gilbert, 5500 Wadsworth Ave., Arvada, executive secretary.

Electron Microscope Society of America. Seventeenth annual meeting. Ohio State University, Columbus, Sept. 9-12, 1959. Sydney S. Breese, Jr., Plum Island Animal Disease Laboratory, Greenport, L.I., N.Y., program chairman.

New York State Veterinary Medical Society. Annual meeting. Grossinger's, Grossinger, N. Y., Sept. 14-16, 1959. F. H. Fox, chairman.

New Mexico Veterinary Medical Association. Annual meeting, Western Skies Hotel, Albuquerque, N. M., Sept. 21-22, 1959. E. R. Leslie, 907 Alamosa, Carlsbad, N.M., secretary.

Animal Care Panel. Annual Convention. Sheraton Park Hotel, Washington, D.C., Oct. 29-31, 1959. William I. Gay, Animal Care Panel, 2101 Constitution Ave., Washington 25, D.C., publicity committee chairman.

Regularly Scheduled Meetings

ALABAMA—Central Alabama Veterinary Medical Association, the first Thursday of each month. James L. Chambers, 4307 Normanbridge Rd., Montgomery, Ala., secretary-treasurer.

Jefferson County Veterinary Medical Association, the second Thursday of each month. Dan P. Griswold, Jr., 714 S. 39th St., Birmingham, secretary.

Mobile-Baldwin Veterinary Medical Association, the third Tuesday of each month. Cecil S. Yarbrough, 4121 U.S. 90 West, Mobile, Ala., secretary.

North Alabama Veterinary Medical Association, the second Thursday of November, January, March, May, July, and September, in Decatur, Ala. Ray A. Ashwander, P.O. Box 1767, Decatur, Ala., secretary.

Northeast Alabama Veterinary Medical Association, the second Tuesday of every other month. Leonard J. Hill, P.O. Box 761, Gadsden, Ala., secretary-treasurer.

ALASKA—Anchorage Group of the Alaska V. M. A., the last Wednesday of each month at Fort Richardson Officers' Club or Thompson's Restaurant 6th and I Streets,

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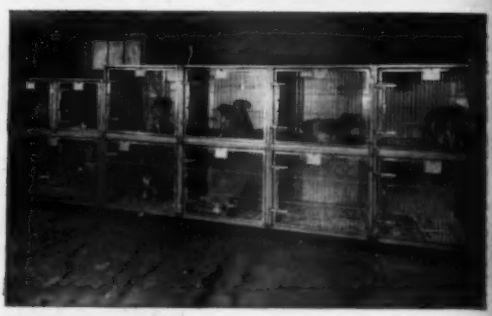

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ARIZONA—Central Arizona Veterinary Medical Association, the second Tuesday of each month. J. W. Langley, Jr., P.O. Box 5013, Phoenix, Ariz., secretary.

Southern Arizona Veterinary Medical Association, the third Wednesday of each month at 7:30 p.m. Gwyn Chapin, 2215 E. Calle Vista, Tuscon, Ariz., secretary.

ARKANSAS—Pulaski County Veterinary Medical Society, the second Tuesday of each month. Harvie R. Ellis, 54 Belmont Drive, Little Rock, Ark., secretary-treasurer.

CALIFORNIA—Alameda-Contra Costa Veterinary Medical Association, the fourth Wednesday of Jan., March, May, June, Aug., Oct., and Nov. John S. Blackard, 420 Appian Way, Richmond, Calif., secretary.

Bay Counties Veterinary Medical Association, the second Tuesday of February, April, July, September, and December. Herb Warren, 3004 16th St., San Francisco, Calif., executive secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. Paul S. Chaffee, 2333 McKinley Ave., Fresno, Calif., secretary.

Humboldt-Del Norte Counties Veterinary Medical Association, the second Tuesday of January, May, September, and November. Dr. C. A. Lamb, 2835 Dolbeer St., Eureka, Calif., secretary.

Kern County Veterinary Medical Association, the first Thursday evening of the month. James L. Frederickson, 17 Nile St., Bakersfield, Calif., secretary-treasurer.

Mid-Coast Veterinary Medical Association, the first Thursday of each month. William P. Matulich, P. O. Box 121, San Luis Obispo, Calif., secretary-treasurer.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. V. Todorovic, 67 Mann Ave., Watsonville, Calif., secretary.

Northern California Association of Veterinarians, the second Tuesday of the month. Andrew F. Giambroni, P.O. Box 782, Red Bluff, Calif., secretary.

North San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month at the Hotel Covell, in Modesto, Calif. T. J. Carleton, 325 W. Lockeford St., Lodi, Calif., secretary-treasurer.

Orange Belt Veterinary Medical Association, the second Monday of each month. R. Y. Foos, P.O. Box 955, Victorville, Calif., secretary-treasurer.

Orange County Veterinary Medical Association, the third Thursday of each month. H. M. Stanton, 1122 S.E. U.S. Highway 101, Tustin, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of the month. R. M. Grandfield, 416 Stephens Rd., San Mateo, Calif., secretary-treasurer.

Redwood Empire Veterinary Medical Association, the third Thursday of the month. R. R. Rediske, 833 Vallejo Ave., Novato, Calif., secretary-treasurer.

Sacramento Valley Veterinary Medical Association, the second Wednesday of the month. E. C. Story, 4819 "V" St., Sacramento 17, Calif., secretary-treasurer.

San Diego County Veterinary Medical Association, the fourth Tuesday of the month. Robert F. Burns, 7572 North Ave., Lemon Grove, Calif., secretary-treasurer.

San Fernando Valley Chapter SCVMA, the second Tuesday of each month at 7:30 p.m., Hody's Restaurant, North Hollywood, Calif. Barbara G. Shirley, Canoga Park, Calif., secretary-treasurer.

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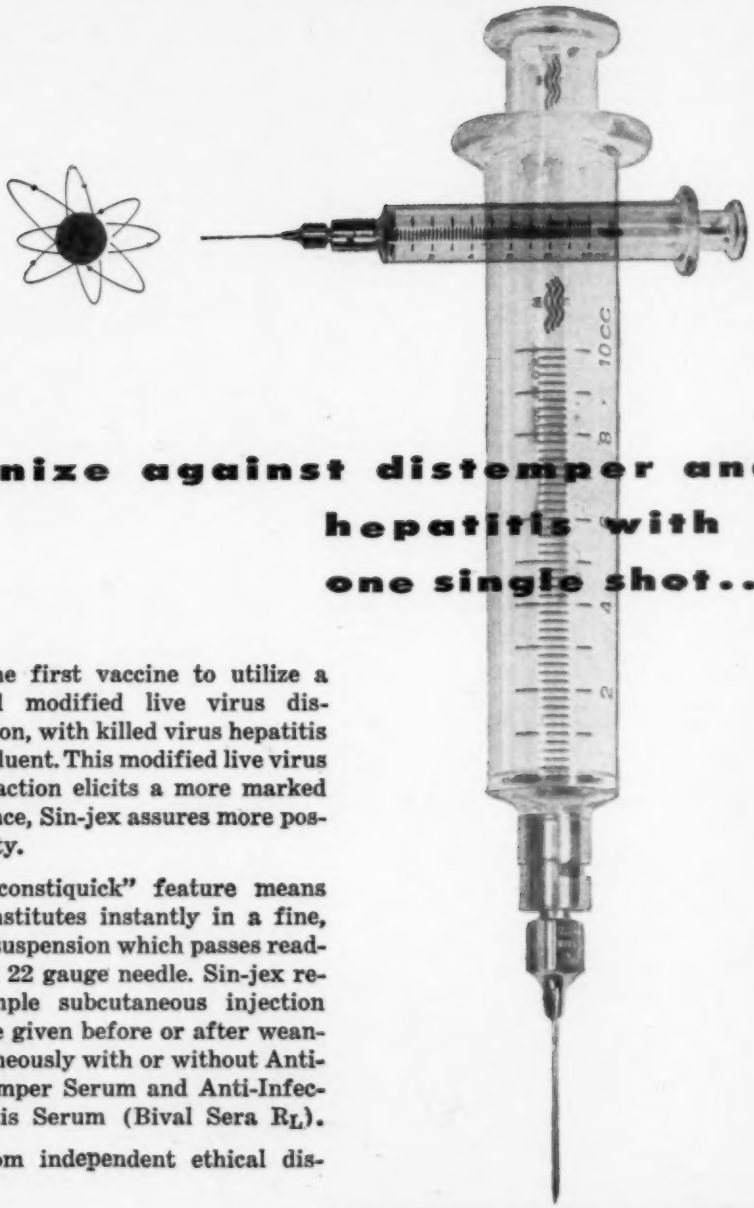

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San Fernando Valley Veterinary Medical Association, the second Friday of each month at the Casa Escobar Restaurant in Studio City. John Chudacoff, 7912 Sepulveda Blvd., Van Nuys, Calif., secretary.

Santa Barbara-Ventura Counties Veterinary Medical Association, every three months, no set date. Gerald M. Clark, 5415 8th St., Carpinteria, Calif., secretary-treasurer.

Santa Clara Valley Veterinary Medical Association, the last Tuesday of the month. Robert L. King, 1269 Grant St., Santa Clara, Calif., secretary-treasurer.

Southern California Veterinary Medical Association, the third Wednesday of the month. Mr. Don Mahan, 1919 Wilshire Blvd., Los Angeles 57, Calif., executive secretary.

COLORADO—Denver Area Veterinary Medical Society, the fourth Tuesday of every month. Gene M. Bierhaus, 2896 S. Federal Blvd., Englewood, Colo., secretary-treasurer.

Northern Colorado Veterinary Medical Society, the first Wednesday of each month, in Fort Collins. Dr. James Voss, Veterinary Hospital, Colorado State University, Fort Collins, Colo., secretary.

DELAWARE—New Castle County Veterinary Medical Association, the first Tuesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. A. P. Mayer, Jr., R.F.D. 2, Newark, Del., secretary-treasurer.

DISTRICT OF COLUMBIA—District of Columbia Veterinary Medical Association, the second Tuesday evenings of January, March, May, and October. R. B. Gochenour, 10109 Ashwood Dr., Kensington, Md., secretary-treasurer.

FLORIDA—Big Bend Veterinary Medical Association, meets the first Sunday of each month at 5:00 p. m., at the Tallahassee Dining Room, Tallahassee. C. Paul Vickers, P.O. Box 309, Tallahassee, secretary.

Central Florida Veterinary Medical Association, the first Friday of each month at 8:00 p. m., place specified monthly. L. R. Poe, 753 W. Fairbanks Ave., Winter Park, Fla., secretary-treasurer.

Florida West Coast Veterinary Medical Association, the second Wednesday of each month at the Lighthouse Inn, St. Petersburg. Fred Jones, 3606 S. Dale Mabry, Tampa, Fla., secretary.

Hillsborough County Veterinary Medical Society, the second Monday evening of each month. For additional information as to the location of each meeting, contact: J. J. Metz, Jr., 5207 Nebraska Ave., Tampa 3, Fla., secretary.

Jacksonville Veterinary Medical Association, the first Thursday of every month. Dodson's Restaurant, Stephen C. Hite, 5807 105th St., Jacksonville 10, Fla., secretary.

Northwest Florida Veterinary Medical Society, third Wednesday of each month, time and place specified monthly. John Webb, P.O. Box 183, Cantonment, Fla., secretary-treasurer.

Palm Beach Veterinary Society, the last Thursday evening of each month. McArthur Dairy Building, Four Points, W. Palm Beach. B. W. Bigger, 2833 S. 4th St., Fort Pierce, Fla., secretary.

Ridge Veterinary Medical Association, the fourth Thursday of each month in Bartow, Fla. John S. Haromy, Route #1, Box 107-A, Lake Wales, Fla., secretary.

South Florida Veterinary Society, the third Wednesday of each month. Time and place specified monthly. Joe B. O'Quinn, 1690 E. 4th, Hialeah, Fla., secretary.

Suwannee Valley Veterinary Association, the fourth Tuesday of each month, Hotel Thomas, Gainesville. G. L. Burch, P.O. Box 405, Ocala, Fla., secretary-treasurer.

Volusia County Veterinary Medical Association, the fourth Thursday of each month. Robert E. Cope, 127 E. Mason, Daytona Beach, Fla., secretary.

GEORGIA—Atlanta Veterinary Medical Society, the third Thursday of each month at the Elk's Home, 726 Peachtree St., Atlanta. Clare L. Bromley, 634 Northside Dr., N.W., Atlanta, Ga., secretary.

Georgia-Carolina Veterinary Medical Association, the second Monday of each month at 8:00 p.m., at the Town Tavern, Augusta, Ga. J. A. Schmitz, 1711 Gwinnett St., Augusta, Ga., secretary.

North Georgia Veterinary Medical Association, quarterly, no set date, the spring meeting at the Veterinary School, Athens, Ga. S. J. Shirley, Commerce, Ga., secretary.

Southeast Georgia Veterinary Medical Association, quarterly, date and meeting place varies. Hugh F. Arundel, P.O. Box 153, Statesboro, Ga., secretary.

South Georgia Veterinary Medical Association, the second Sunday of each quarter at 3:30 p.m., at the Radium Springs Hotel, Albany, Ga. M. W. Hale, Route 2, Tifton, Ga., secretary.

ILLINOIS—Central Illinois Veterinary Medical Association, June 9, Sept. 9, and Dec. 10, 1959. Paul B. Doby, 4 Owens Lane, Springfield, secretary.

Chicago Veterinary Medical Association, the second Tuesday of each month, Charles H. Armstrong, 1021 Davis St., Evanston, secretary.

INDIANA—Calumet Area Veterinary Medical Association, the first Thursday of each month. Bruce Sharp, Box 166, Hobart, Ind., secretary-treasurer.

Central Indiana Veterinary Medical Association, the second Wednesday of each month. P. T. Parker, 224 N. Mill St., Plainfield, Ind., secretary-treasurer.

Michiana Veterinary Medical Association, the second Thursday of every month except July and December, at the Hotel LaSalle, South Bend, Ind. Stanton Williamson, 217 W. Chippewa St., South Bend, Ind., secretary.

Tenth District Veterinary Medical Association, the third Thursday of each month. J. S. Baker, P.O. Box 52, Pendleton, Ind., secretary.

IOWA—Cedar Valley Veterinary Medical Association, the second Monday of each month, except January, July, August, and October in Black's Tea Room, Waterloo, Iowa. A. J. Cotten, P.O. Box 183, Grundy Center, secretary.

Central Iowa Veterinary Medical Association, the third Monday of each month except June, July, and August at 6:30 p.m., Breeze House, Ankeny, Iowa. S. L. Hendricks, secretary-treasurer .

Central Iowa Veterinary Medical Association, the third Monday of each month, except June, July, and August, at 6:30 p.m., Breeze House, Ankeny, Iowa. John Herrick, 202 S. Hazel Ave., Ames, secretary.

Coon Valley Veterinary Medical Association, the second Wednesday of each month, September through May, at 7:30 p.m., Cobblestone Inn, Storm Lake, Iowa. Robert McCutcheon, Holstein, secretary.

East Central Iowa Veterinary Medical Society, the Second Thursday of each month at 6:30 p.m., usually in Cedar Rapids, Iowa. T. F. Bartley, P.O. Box 454, Cedar Rapids, secretary.

Fayette County Veterinary Medical Association, the third Thursday of each month at 6:30 p.m. in West Union, Iowa. H. J. Morgan, West Union, secretary.

Lakes Veterinary Association, the first Tuesday of each month, September through May, at 6:30 p.m., at the Gardson Hotel, Estherville, Iowa. Barry Barnes, P.O. Box 162, Milford, secretary.

North Central Iowa Veterinary Medical Association, the third Thursday of April, at the Warden Hotel, Fort

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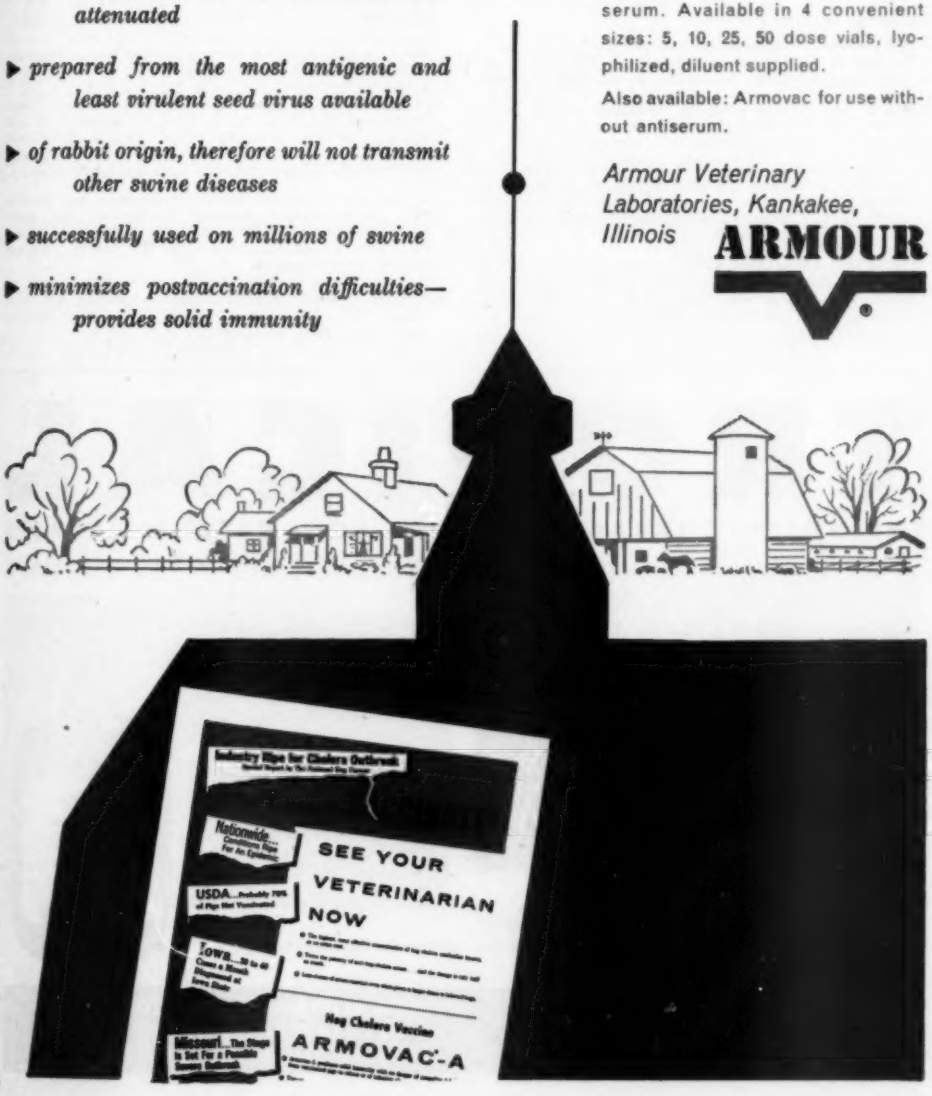

Dodge, Iowa. H. Engelbrecht, P. O. Box 797, Fort Dodge, secretary.

Northeast Iowa-Southern Minnesota Veterinary Association, the first Tuesday of February, May, August, and November at the Wisneslick Hotel, Decorah, Iowa, 6:30 p.m. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Northwest Iowa Veterinary Medical Association, the second Tuesday of February, May, September, and December, at the Community Bldg., Sheldon. W. Ver Meer Hull, secretary.

Southeastern Iowa Veterinary Association, the first Tuesday of each month at Mt. Pleasant, Iowa. Warren Kilpatrick, Mediapolis, secretary.

Southwestern Iowa Veterinary Medical Association, the first Tuesday of April and October, Hotel Chieftain, Council Bluffs, Iowa. J. P. Stream, 202 S. Stone St., Creston, secretary.

Upper Iowa Veterinary Medical Association, the third Tuesday of each month at 7:00 p.m., at All Vets Center, Clear Lake, Iowa. W. A. Danker, Dows, Iowa, secretary.

KENTUCKY—Central Kentucky Veterinary Medical Association, the first Wednesday of each month. R. H. Folsom, P.O. Box 323, Danville, Ky., secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday of each month in Louisville or within a radius of 50 miles, except January, May, and July. G. R. Comfort, 2102 Reynolds Lane, Louisville, Ky., secretary-treasurer.

LOUISIANA—New Orleans Veterinary Medical Association, the third Thursday of every month at the Monteleone Hotel, New Orleans, at 8:30 p. m. Ronald C. Francis, 6421 Chef Menteur Highway, New Orleans, La., secretary-treasurer.

MARYLAND—Baltimore City Veterinary Medical Association, the second Thursday of each month, September through May (except December), at 9:00 p.m., at the Park Plaza Hotel, Charles and Madison St., Baltimore, Md. Leonard D. Krinsky, 6111 Hartford Rd., Baltimore, Md., secretary.

MICHIGAN—Central Michigan Veterinary Medical Association, the first Wednesday of every month at 7 p.m. Jerry Fries, 2070 E. Main St., Owosso, Mich., secretary.

Mid-State Veterinary Medical Association, the fourth Thursday of each month with the exception of November and December. Robert W. Acton, 4110 Spring Rd., Jackson, Mich.

Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. Alvin R. Conquest, P.O. Box 514, Grand Blanc, Mich., secretary.

Southeastern Michigan Veterinary Medical Association, the fourth Wednesday of every month, September through May. Louis J. Rossoni, 24531 Princeton Ave., Dearborn 8, Mich., secretary.

MISSOURI—Greater St. Louis Veterinary Medical Association, the first Friday of each month (except July and August), at the Coronado Hotel, Lindell Blvd. and Spring Ave., St. Louis, Mo., at 8 p.m. Edwin E. Epstein, 4877 Natural Bridge Ave., St. Louis 15, Mo., secretary.

Kansas City Veterinary Medical Association and Kansas City Small Animal Hospital Association, the third Thursday of each month at the Hotel President, Kansas City, Mo. Robert E. Guilfoil, 18 N. 2nd St., Kansas City 18, Kan., secretary.

NEVADA—Western Nevada Veterinary Society, the first Tuesday of each month. Paul S. Silva, 1170 Airport Road, Reno, Nev., secretary.

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NEW JERSEY—Central New Jersey Veterinary Medical Association, the second Thursday of November, January, March, and May at Old Hights Inn, Hightstown, N. J. David C. Tudor, R.D. 1, Box 284A, Cranbury, N. J., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from October through April, except December, at the Irvington House, 925 Springfield Ave., Irvington, N.J. Bernard M. Weiner, 787 Clinton Ave., Newark, N.J., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday of each month at the Elks Club, Hackensack. James R. Tanzola, Upper Saddle River, N.J., secretary.

Northwest Jersey Veterinary Society, the third Wednesday of every odd month. G. L. Smith, P.O. Box 938, Trenton, N.J., secretary.

South New Jersey Veterinary Medical Association, the fourth Tuesday of each month at the Collmont Diner, Collingswood, N.J. Marvin Rothman, 718 Dwight Ave., Collingswood, N.J., secretary.

NEW MEXICO—Bernalillo County Veterinary Practitioners Association, the third Wednesday of each month, Fez Club, Albuquerque. Donald W. Fitzgerald, 1825 Lomas Blvd., N.E., Albuquerque, N.M., secretary-treasurer.

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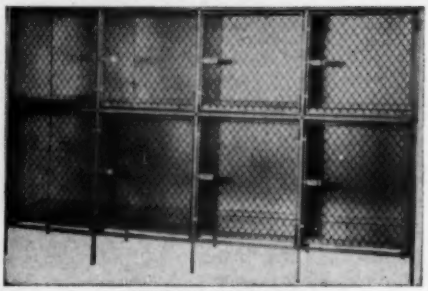

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NEW YORK—New York City, Inc., Veterinary Medical Association of, the first Wednesday of each month at the New York Academy of Sciences, 2 East 63rd St., New York City. C. E. DeCamp, 43 West 61st St., New York 23, N. Y., secretary.

Monroe County Veterinary Medical Association, the first Thursday of even-numbered months except August. Irwin Bircher, 50 University Ave., Rochester, N. Y., secretary.

NORTH CAROLINA—Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel, Greensboro. C. G. Sims, 2450 Battleground Ave., Greensboro, N. Car., secretary.

Eastern North Caroline Veterinary Medical Association, the last Tuesday evening of each month, time and place specified monthly. Byron H. Brow, Box 453, Goldsboro, N. Car., secretary-treasurer.

Piedmont Veterinary Medical Association, the last Friday of each month. J. G. Martin, Boone, N. Car., secretary.

Twin Carolinas Veterinary Medical Association, the third Friday of each month at Orange Bowl Restaurant, Rockingham, N. Car., at 7:30 p.m. J. E. Currie, 690 N. Leak St., Southern Pines, N. Car., secretary.

Western North Carolina Veterinary Medical Association, the second Thursday of every month at 7:00 p.m. in the George Vanderbilt Hotel, Asheville, N. Car. Viiu Lind, 346 State St., Marion, N. Car., secretary.

OHIO—Cincinnati Veterinary Medical Association, the third Tuesday of every month at Shuller's Wigwam, 6210 Hamilton Ave., at North Bend Road. G. C. Lewis, 451 E. Galbraith Rd., Cincinnati, Ohio, secretary-treasurer.

Columbus Academy of Veterinary Medicine, every month, September through May. E. M. Simonson, 3120 Valley View Dr., Columbus, Ohio, secretary-treasurer.

Cuyahoga County Veterinary Medical Association, the first Wednesday in September, October, December, February, March, April and May, at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. F. A. Coy, 8208 Carnegie Ave., Cleveland, Ohio, secretary.

Dayton Veterinary Medical Association, the third Tuesday of every month. O. W. Fallang, 6941 Far Hills Ave., Dayton, secretary.

Killbuck Valley Veterinary Medical Association, the first Wednesday of alternate months beginning with February. C. Gale, Wooster, Ohio, secretary-treasurer.

Mahoning County Veterinary Medical Association, the Fourth Tuesday of each month, at 9:00 p.m. Youngstown Maennerchor Club, Youngstown, Ohio. Sam Segall, 2935 Glenwood Ave., Youngstown, secretary.

Miami Valley Veterinary Medical Association, the first Wednesday of December, March, June, and September. J. M. Westfall, Greenville, Ohio, secretary-treasurer.

North Central Ohio Veterinary Medical Association, the last Wednesday of each month except during the summer. R. W. McClung, Tiffin, Ohio, secretary-treasurer.

Northwestern Ohio Veterinary Medical Association, the last Wednesday of March and July. C. S. Alvanos, 1683 W. Bancroft St., Toledo, Ohio, secretary-treasurer.

Stark County Veterinary Medical Association, the second Tuesday of every month, at McBrides Emerald Lounge, Canton, Ohio. M. L. Willen, 4423 Tuscarawas St., Canton, Ohio, secretary.

Summit County Veterinary Medical Association, the last Tuesday of every month (except June, July, and August), at the Mayflower Hotel, Akron, Ohio. M. L. Scott, 42 W. Market St., Akron, Ohio, secretary-treasurer.

Tri-County Veterinary Medical Association, the fourth

Wednesday of January, May, and September. Mrs. R. Slusher, Mason, Ohio, secretary-treasurer.

OKLAHOMA—Oklahoma County Veterinary Medical Association, the second Wednesday of every month, 7:30 p.m., Patrick's Foods Cafe, 1016 N.W. 23rd St., Oklahoma City. Claude A. Tigert, 3032 N.W. 68th St., Oklahoma City, Okla., secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month at the City-County Health Building, 4616 E. 15th St., Tulsa, Okla. Arlen D. Hill, 5302 E. 11th St., Tulsa, Okla., secretary.

Tulsa Association of Small Animal Veterinarians, first and third Mondays, City-County Health Dept. T. E. Messler, 3104 E. 51st St., Tulsa, Okla., secretary.

OREGON—Portland Veterinary Medical Association, the second Tuesday of each month, at 7:30 p.m. Ireland's Restaurant, Lloyds, 718 N.E. 12th Ave., Portland. Donald L. Moyer, 8415 S.E. McLoughlin Blvd., Portland 2, Ore., secretary.

Willamette Veterinary Medical Association, the third Tuesday of each month, except July and August, at the Marion Hotel, Salem. Robert J. Mallorie, P.O. Box 155, Silverton, Ore., secretary.

PENNSYLVANIA—Keystone Veterinary Medical Association, the fourth Wednesday of each month at the University of Pennsylvania School of Veterinary Medicine. Raymond C. Snyder, N.E. Corner 47th St. and Hazel Ave., Philadelphia 43, Pa., secretary.

Lehigh Valley Veterinary Medical Association, the first Thursday of each month. Stewart Rockwell, 10th and Chestnut Sts., Emmaus, Pa., secretary.

Pennsylvania Northern Tier Veterinary Medical Association, the third Wednesday of each odd numbered month. R. L. Michel, Troy, Pa., secretary.

SOUTH CAROLINA—Piedmont Veterinary Medical Association, the third Wednesday of each month at the Fairforest Hotel, Union, S. Car. Worth Lanier, York, S. Car., secretary.

Georgia-Carolina Veterinary Medical Association—see GEORGIA.

TEXAS—Coastal Bend Veterinary Association, the second Wednesday of each month. Jack E. Habluetzel, Route 1, Box 65-N, Ingleside, Texas, secretary.

Dallas County Veterinary Medical Association, the first Tuesday of each month at 7:30 p.m., at a place to be specified. Frank N. Black, 12830 Preston Rd., Dallas, Texas, corresponding secretary.

UTAH—Salt Lake Small Animal Hospital Association, the first Monday of every month, at the Holiday Inn, 3040 South State St., Salt Lake City, at 12:15 p. m. Douglas H. McKelvie, 1220 S. State St., Salt Lake City, Utah, secretary-treasurer.

VIRGINIA—Central Virginia Veterinary Association, the second Thursday of each month at 8:00 p. m., except July and August, at a place in Richmond to be announced monthly. Edwin M. Crawford, secretary-treasurer.

Northern Virginia Veterinary Conference Association, the second Tuesday of each month. T. P. Koudelka, P.O. Box 694, Harrisonburg, Va., secretary.

Northern Virginia Veterinary Society, the second Wednesday of every third month. Meeting place announced by letter. H. C. Newman, Box 145, Merrifield, secretary.

(*Continued on adv. p.* 54)

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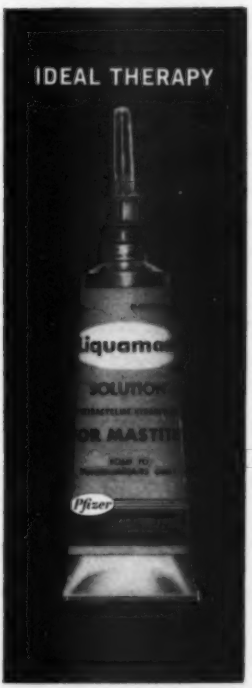

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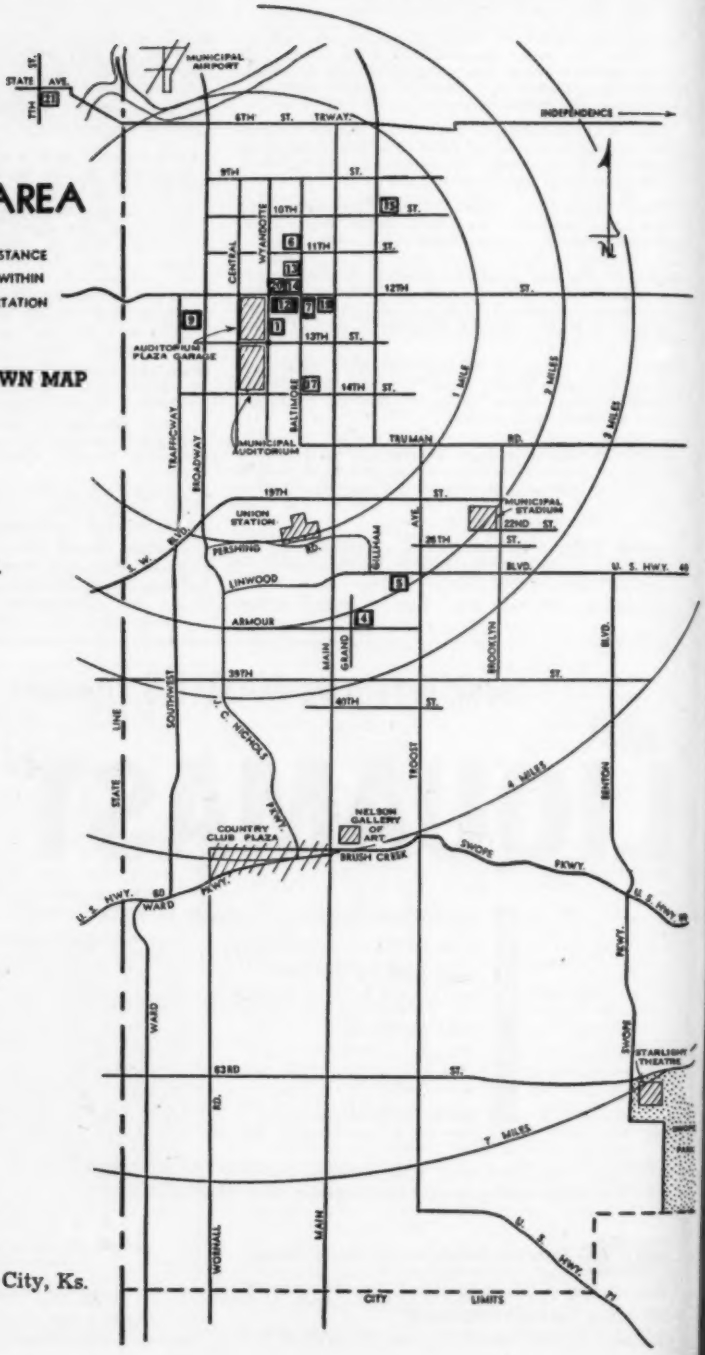
Map of the GREATER KANSAS CITY AREA

ALL HOTELS NOT IN WALKING DISTANCE OF MUNICIPAL AUDITORIUM ARE WITHIN 10 MINUTES BY PUBLIC TRANSPORTATION

HOTEL LIST AND DOWNTOWN MAP

NO.	HOTEL
1	Aladdin, 1213 Wyandotte
4	Bellerive, 214 East Armour Blvd.
5	Berkshire, 1021 E. Linwood
6	Continental, 11th & Baltimore
7	Dixon, 12th & Baltimore
9	Kansas Citian, 1216 Broadway
12	Muehlebach, 12th & Baltimore
13	New Yorker, 1114 Baltimore
14	Phillips, 12th & Baltimore
15	Pickwick, 10th & McGee
17	President, 14th & Baltimore
19	Senator, 17 W. 12th St.
20	State, 12th & Wyandotte
21	Town House, 7th and State, Kansas City, Ks.



HOTEL INFORMATION — KANSAS CITY, MO., CONVENTION

Ninety-Sixth Annual AVMA Meeting, Aug. 23-27, 1959

All requests for hotel accommodations will be handled by a Housing Bureau in cooperation with the Committee on Local Arrangements. The Bureau will clear all requests and confirm reservations.

Hotel and Rate Schedule

Map No.	Hotel	Single	Double	Twin	Suite
1.	Aladdin*	$4.50-8.50	$ 6.50-10.50	$ 9.50-12.00	$17.00-30.00
4.	Bellerive*	5.00-9.00	8.00-12.00	9.00-13.00	From $18.00
5.	Berkshire*	5.00-7.00	7.00-10.00	8.50-10.00	From $14.00
6.	Continental*	6.50-11.00	8.50-13.50	10.00-14.00	$20.00-32.00
7.	Dixon	4.50-7.00	6.50-9.00	8.00-12.00	- - - - - - -
9.	Kansas Citian	3.50-8.00	5.50-11.00	7.00-14.00	From $10.00
12.	Muehlebach*	Headquarters Hotel — No Room Accommodations			
13.	New Yorker	5.50-12.00	8.00-14.00	9.50-14.00	$23.00
14.	Phillips*	7.50-10.50	9.50-13.00	11.50-14.00	$20.50-35.00
15.	Pickwick*	5.85-10.85	6.35-10.85	8.35-12.50	From $14.00
17.	President*	6.50-10.00	9.50-13.00	11.00-15.00	$25.00
19.	Senator	3.50-7.00	5.00-10.00	6.00-10.00	$15.00
20.	State	4.75-6.50	7.50-8.75	8.75-9.25	- - - - - - -
21.	Town House*	5.50-12.00	10.00-13.50	11.00-16.00	From $23.00

*100 per cent air-conditioned; in other hotels listed, majority of rooms air-conditioned.

FAMILY PLAN—The above hotels offer a "family plan" whereby children under 14 years of age will be accommodated in the same room with their parents at no extra charge. If more than one room is required to accommodate children, the hotel will charge only the single rate for each room.

MOTELS—Reservations for motels in the Kansas City area may be made through the Kansas City Convention and Visitors Bureau, 1030 Baltimore Ave., Third Floor, Kansas City 5, Missouri.

PLEASE USE APPLICATION ON REVERSE SIDE FOR HOTEL ACCOMMODATIONS

Application for Hotel Accommodations

1959 AVMA Convention — Kansas City, Missouri

The Convention and Visitors Bureau will make every effort to place you according to your expressed wishes, or to best advantage elsewhere if that is not possible and you desire us to do so.

Please give us the complete information requested below. At least four choices of hotels, or more if you desire, are necessary. Arrange for double occupancy of rooms wherever possible; only a limited number of single rooms is available.

Date.....

Please make hotel reservation in accordance with the following:
Accommodations desired:

Hotel.....First Choice

Hotel.....Second Choice

Hotel.....Third Choice

Hotel.....Fourth Choice

.....Room WITH bath for one person Rate per room desired $..... to $.....

.....Room WITH bath for two persons (double bed) Rate per room desired $..... to $.....

.....Room WITH bath for two persons (twin beds) Rate per room desired $..... to $.....

.....Large room WITH bath for..... persons Rate per room desired $..... to $.....

.....Suite—Parlor, ...Bedroom(s) with bath for ..... persons. Rate per suite desired $.....

Arrival date....., hour.....A. M. .....P. M.
Departure date.....

If reservation cannot be made in one of the hotels indicated shall we place you elsewhere? Yes..... No.....

Please check your mode of transportation: Car..... Train..... Plane..... Bus.....

Rooms will be occupied by (NAMES OF ALL PARTIES MUST BE LISTED)
(PLEASE PRINT)

NAME	STREET ADDRESS	CITY	STATE

.....Check here if you desire accommodations on the FAMILY PLAN.

Name .....

Street address .....

City ..... State .....

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Southwestern Virginia Veterinary Medical Association, the first Thursday of each month. D. F. Watson, Blacksburg, secretary.

WASHINGTON—Seattle Veterinary Medical Association, the third Monday of each month, Magnolia American Legion Hall, 2870 32nd W., Seattle. Roy C. Toole, 10415 Main St., Bellevue, secretary.

South Puget Sound Veterinary Association, the second Thursday of each month except July and August. B. D. Benedictson, 3712 Plummer St., Olympia, Wash., secretary.

WEST VIRGINIA—Kyowva (Ky., Ohio, W. Va.) Veterinary Medical Association, the third Thursday of each month in the Hotel Pritchard, Huntington, W. Va., at 8:30 p.m. Harry J. Fallon, 200 5th St., W. Huntington, W. Va., secretary.

WISCONSIN—Central Wisconsin Veterinary Medical Association, the second Tuesday of each quarter (March, June, Sept., Dec.) C. R. Carlson, 1109 E. LaSalle Ave., Barron, Wis., secretary.

Coulee Region Veterinary Medical Association, the third Wednesday of every other month. F. N. Petersen, Box 127, Cashton, Wis., secretary.

Dane County Veterinary Medical Association, the second Thursday of each month. Dr. E. P. Pope, 409 Farley Ave., Madison, Wis., secretary.

Milwaukee Veterinary Medical Association, the third Tuesday of each month, at the Half-Way House, Blue Mound Rd. Dr. Jordan Lewis, Menomonee Falls, Wis., secretary-treasurer.

Northeastern Wisconsin Veterinary Medical Association, the third Wednesday in April. William Madson, 218 E. Washington St., Appleton, Wis., secretary.

Rock Valley Veterinary Medical Association, the first Wednesday of each month. L. C. Allenstein, 209 S. Taft St., Whitewater, Wis., secretary.

Southeastern Veterinary Medical Association, the third Thursday of each month. John R. Curtis, 419 Cook St., Portage, Wis., secretary.

Wisconsin Valley Veterinary Medical Association, the second Tuesday of every other month. John B. Fleming, 209 E. 4th St., Marshfield, Wis., secretary.

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Pfizer Seventh Annual Research Conference and International Animal Feed Symposium

Scientists and farm leaders from 12 European countries, Canada, and the United States met at Terre Haute, Ind., May 8 and 9. U.S. farm specialists discussed food production and marketing, and how livestock and crops can help win the peace.

This international event was held as part of the Seventh Annual Research Conference of the Pfizer Agricultural Research and Development Center.

U.S. experts participating in the conference included Dr. J. R. Couch, professor of poultry science, Texas A. & M. College; Dr. T. W. Dowe, director of the University of Vermont Experiment Station; Dr. R. P. Link, professor of veterinary medicine, University of Illinois; and Dr. C. M. McCay, professor of nutrition, Department of Animal Husbandry, Cornell University.

The Seventh Annual Research Conference was an official part of the International Animal Feed Symposium, sponsored by the U.S. Department of Agriculture in cooperation with the Soybean Council of America, Inc. The program was launched May 4 at a three-day meeting at the U.S.D.A. in Washington, D. C.

Dr. Mitchell Joins Research Staff at Pitman-Moore

Dr. Frank E. Mitchell (GA '55) has been appointed to the research staff of the Pitman-Moore Company as a veterinary pathologist.

After receiving his D.V.M. degree, Dr. Mitchell was employed by the Georgia Coastal Plain Experiment Station for two years. He received his M.S. degree in veterinary pathology from Iowa State College.

E. A. Cahill, Jr. Elected Secretary of Allied Laboratories

Allied Laboratories, Inc. has announced the election of E. A. Cahill, Jr. to the office of secretary.

He has been associated with Allied Laboratories since 1940, and since March, 1957, has been a member of the board of directors.

Mr. Cahill is chairman of the Control Agency appointed by the Secretary of Agriculture to regulate the hog cholera serum-virus industry, is a member of the Livestock Sanitary Association, and is affiliated with several industry associations.

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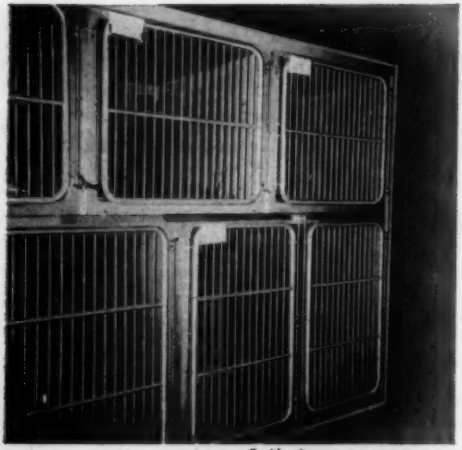

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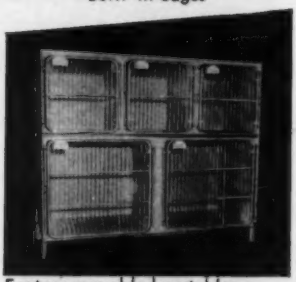

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PERSONAL WANT ADS—$4.00 for the first 25 words and 10 cents for each additional word; 35 cents for use of box number.

TOTAL WORD COUNT must include complete box number address (8 words) or personal address line.

COMMERCIAL WANT ADS—$5.00 for the first 25 words, 25 cents for each additional word; $1.00 for use of box number. See paragraph above for total word count.)

Remittance must accompany ad.

DEADLINES

1st of month issue — 8th of month preceding date of issue.

15th of month issue — 22nd of month preceding date of issue.

Names of classified advertisers using key letters can not be supplied. Address your reply to the box number, c/o JOURNAL of the AVMA, 600 S. Michigan Ave., Chicago 5, Ill., and it will be sent to the advertiser.

Wanted—Veterinarians

Veterinarian with Master's degree wanted for laboratory and diagnostic work. Address Norden Laboratories, Lincoln, Neb.

Relief veterinarian to operate small animal practice in Philadelphia, Pa., for the month of August. Apartment available. Address Box K 26, JOURNAL of the AVMA.

International pharmaceutical company requires veterinarian (graduated approximately 2 years) to develop new veterinary products. Experienced in control of nutritional and parasitic disease problems in large animals essential. Previous commercial experience desirable. Salary and company benefits commensurate with experience. Write stating all details, previous experience, interests, qualifications, etc. Address Box K 29, JOURNAL of the AVMA.

Veterinarian for small animal hospital, California license. Good opportunity, Los Angeles area. Address Box K 30, JOURNAL of the AVMA.

Wanted—veterinarian as assistant in busy small animal practice in northern Illinois. Recent graduate desired. Address Box K 31, JOURNAL of the AVMA.

Wanted—veterinarian for small animal work on Long Island. No evening or Sunday hours. Position is suitable for recent graduate. Address Box K 33, JOURNAL of the AVMA.

Wanted—Positions

Graduate veterinarian, now in special graduate studies in public health, capable executive and personnel administration, desires challenging position in teaching; laboratory diagnostics; commercial sales, promotion, development; human or animal health program. Address Box H 38, JOURNAL of the AVMA.

Recent graduate desires small animal position in Missouri, Texas, or Colorado. Married; no military obligations. Would consider lease. Dr. K. E. Wilkins, Box 241, Remington, Ind.

Wanted—position in small animal hospital in Ohio or states eastward leading to permanent future. Energetic Ohio graduate, experienced in A.A.H.A. hospitals, 30 years of age, married, with military obligation completed. Address Box K 25, JOURNAL of the AVMA.

Senior Army veterinarian retiring. Trained and experienced all phases animal medicine, food inspection, teaching, laboratory, administration, organization. Address Box K 27, JOURNAL of the AVMA.

Wanted—Practices

Seek purchase or lease with option of going small animal practice in middle Atlantic state. Also consider partnership arrangement. Well experienced; approved school. Address Box K 15, JOURNAL of the AVMA.

Practice wanted—wish to purchase practice in Wisconsin. Experienced, can make decent down payment. Dor Elkins, Box 138, Puckingham, Pa.

For Sale or Lease—Practices

For sale—Ohio general practice, established over 20 years, 65 per cent large and 35 per cent small animal practice. Gross for last five years over $45,000. Price includes 11-room house, small animal hospital, drugs, and equipment. Price $40,000. Details on inquiry, terms can be arranged. Address Box H 7, JOURNAL of the AVMA.

For sale—large animal practice in small Georgia town. Some small animals. Large gross. Price can include home, office, and equipment or part. Will finance to right party. Address Box K 28, JOURNAL of the AVMA.

For sale—dairy cattle practice in central Minnesota. Real estate, equipment, and drugs. Address Box K 32, JOURNAL of the AVMA.

For sale—eastern North Carolina hospital and kennels and general practice; hospital and kennels constructed in 1947; practice 18 years established. Prefer to sell, but will discuss lease arrangements. Write Box 3005, Wilson, N. Car.

For sale or lease—small animal hospital and 2-bedroom home combination, Denver, Colo. Contact Dr. Fred P. Mursko, 2623 15th Ave., Greeley, Colo.

For sale—modern, equipped hospital, Florida coastal city, 40,000 drawing. $40,000 yearly gross. Adjoining pet and pet supply shop grossing additional $5,000 a year. Selling due to ill health. $50,000 total, less than one-third down, excellent opportunity for veterinarian desiring to get ahead. Address Box K 34, JOURNAL of the AVMA.

Miscellaneous

GUMMED PRESCRIPTION LABELS on rolls, printed to order; used by thousands of veterinarians. Handy dispenser, polyethylene protection; low cost. Money back guarantee. Postcard brings samples. Boyd's Printery, West Point, Neb.

For sale—portable Fisher x-ray machine, infrared lamp, hand fluoroscope, examination light, darkroom light, National cautery machine. Reason for selling: Dr. Green passed away. Address Mrs. F. C. Green, Box 377, Alva, Okla.

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*Belloff, G. B.: Calif. Vet. 9:16 (Nov.-Dec.) 1956.

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